THE IRON AGE

New York, February 9, 1928

ESTABLISHED 1855 VOL. 121, No. 6

# Heat Treating Three Thousand Automobile Bumpers Daily

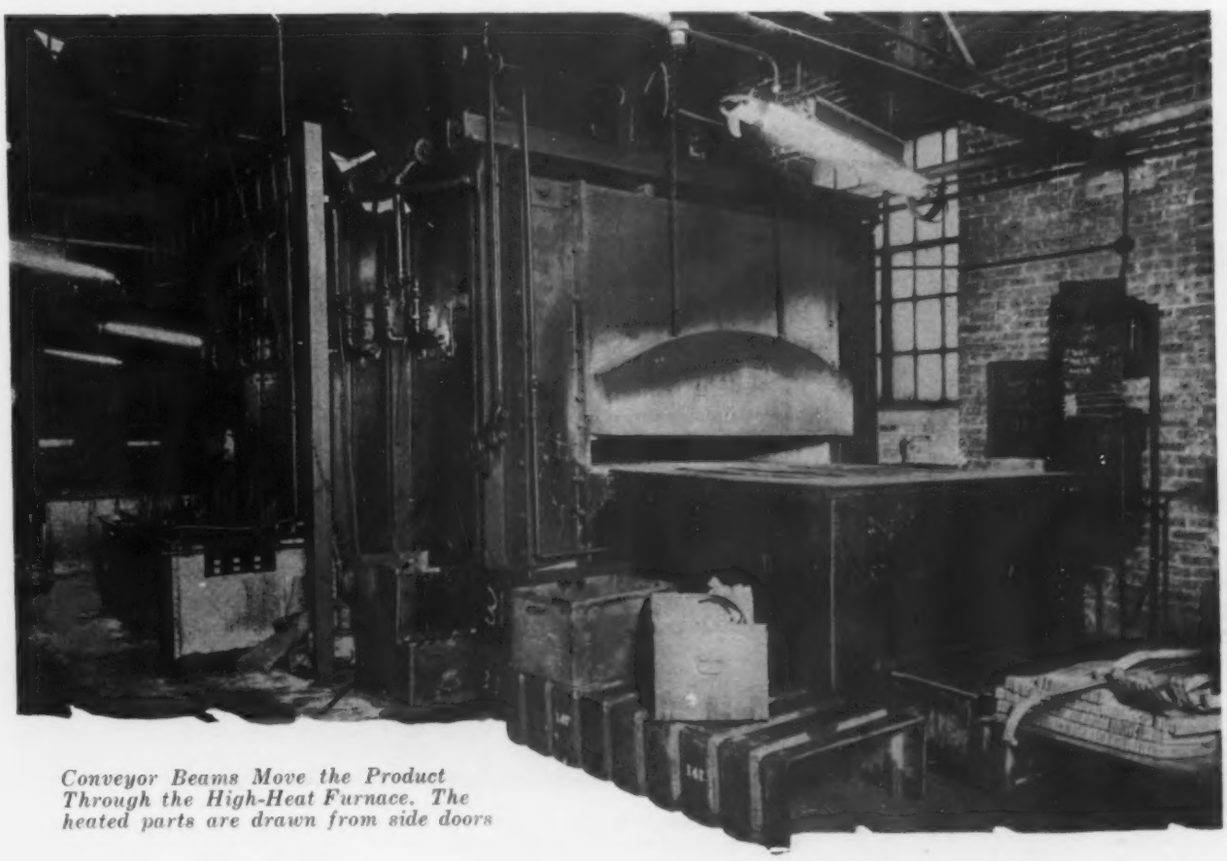
## *Furnaces Fired by City Gas Mixed With Air in Central Reservoir—Special Equipment Prevents Distortion in Quenching—Close Control of Temperature a Feature of Chicago Plant*

BY ROGERS A. FISKE*

ACCURATE control of furnace temperatures for hardening and close attention to the rate of heating and the time for soaking have successfully brought about marked uniformity in the heat treating of 3000 automobile bumpers a day at the plant of the Stewart-Warner Speedometer Corporation, Chicago. The equipment includes two special conveyor-type, gas-fired furnaces, one for hardening and one for drawing. In the former, temperatures are automatically controlled within limits of 10 deg. Fahr. A conveyor system sets the pace for the progress of the material, and the character of the equipment is such that a high degree of skill is not required of the furnace operators.

Simplicity of the layout is an impressive feature. The furnaces are parallel to each other so that parts that have been heated in the hardening furnace and then quenched are transported across an aisle to the

*Western Editor THE IRON AGE, Chicago.



*Conveyor Beams Move the Product Through the High-Heat Furnace. The heated parts are drawn from side doors*

entering end of the drawing furnace. The operators have ample floor space on which to perform their duties, and the aisles are wide enough to facilitate repairs to the furnaces. The flow of the product is uniform, so that it has not been necessary to provide storage on the floor of the department for parts undergoing heat treatment. The conveyor in the drawing furnace, which is of the chain grate type, extends beyond the discharge gate. As each bumper part comes into view, it is removed by hand and placed with a minimum of motion on a conveyor that delivers it to the grinding and plating departments.

### Fuel and Air Mixed in Central Plant

City gas of 530 B.t.u. per cubic foot is used for practically all of the heat-treating operations. To assure a non-oxidizing flame, the gas is mixed with air in a central plant. The proportions are one part of gas to one and one-half parts of air. Furnace operators therefore require little or no knowledge of the principles of combustion, inasmuch as the amount of air content necessary to support combustion is regulated for them. In the gas-mixing department are several compressors, which raise the air-gas mixture to a pressure of 25 oz. per square inch for distribution throughout the plant.

Shears used for cutting stock to the proper length, together with heating furnaces and presses, are located in a room adjacent to the heat-treating department. After being pressed into form, bumper bars, springs, bracket parts and bumperettes are delivered to the operator in charge of feeding the hardening furnace. The conveyor on this furnace projects beyond the feed door, so that the operator works under favorable conditions insofar as radiant heat from the furnace is concerned.

The high-heat or hardening unit is of the conveyor-beam type, i.e., the bar stock is fed into and through the furnace by means of four beams operating through slots in the hearth of the furnace. The principal feature of the conveyor beams is that they are tile-covered; hence no metal projects into the furnace or is subjected to heat.

The motion of the beams is obtained through a cam and crank mechanism, the cams raising and lowering the beams and the transverse motion being obtained through the crank action. The mechanism is so designed that there is no forward or backward travel of the beams during the raising or lowering period. This insures a true rectilinear motion and prevents the material from dragging on the hearth of the furnace, which would tend to wear out the hearth or distort the plates carried on the beams.

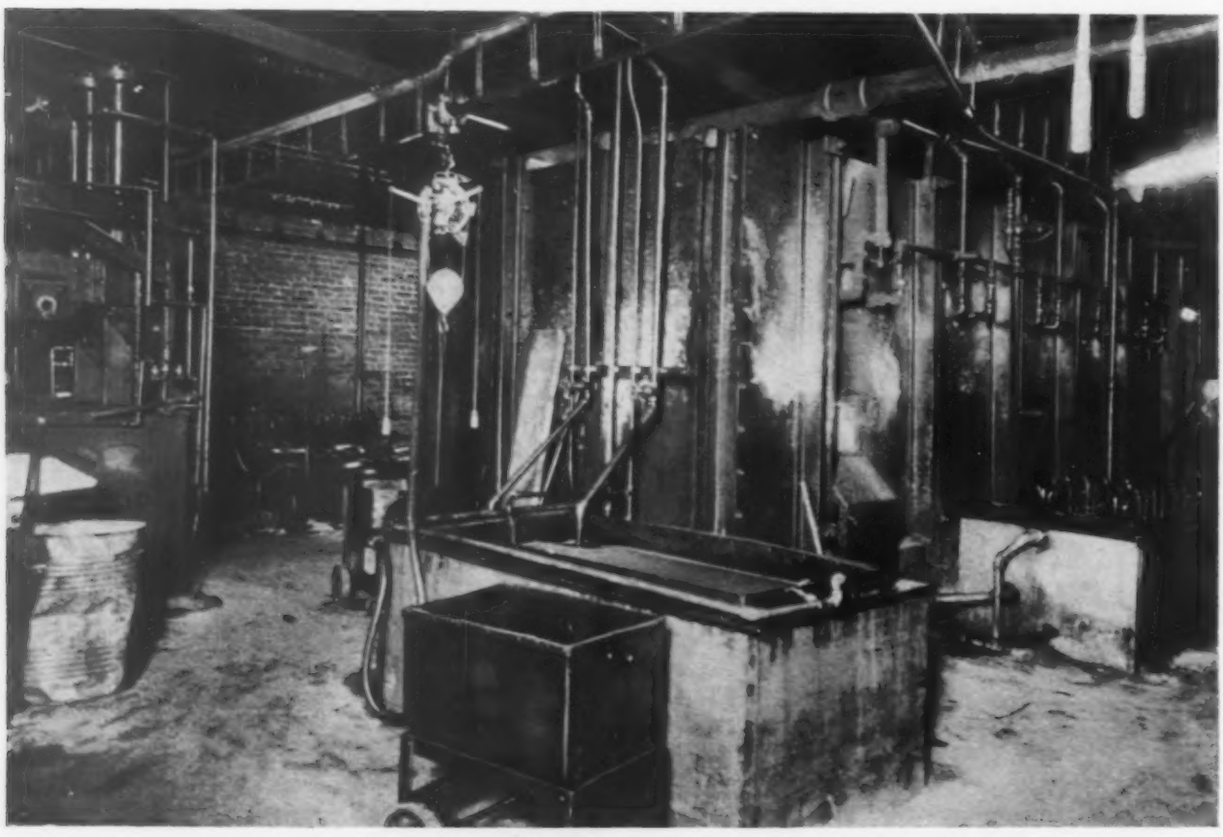
The beams are built of heavy structural shapes, on top of which are clamped the insulation and tile which project into the furnace. The beams are carried on heavy flanged rollers and rocker arms, and approximately 80 per cent of the weight of the beams themselves is counterweighted. All the operating mechanism is under the furnace, where it is accessible for oiling and for repairs.

### Overhead Combustion Chamber Insures Uniform Heat

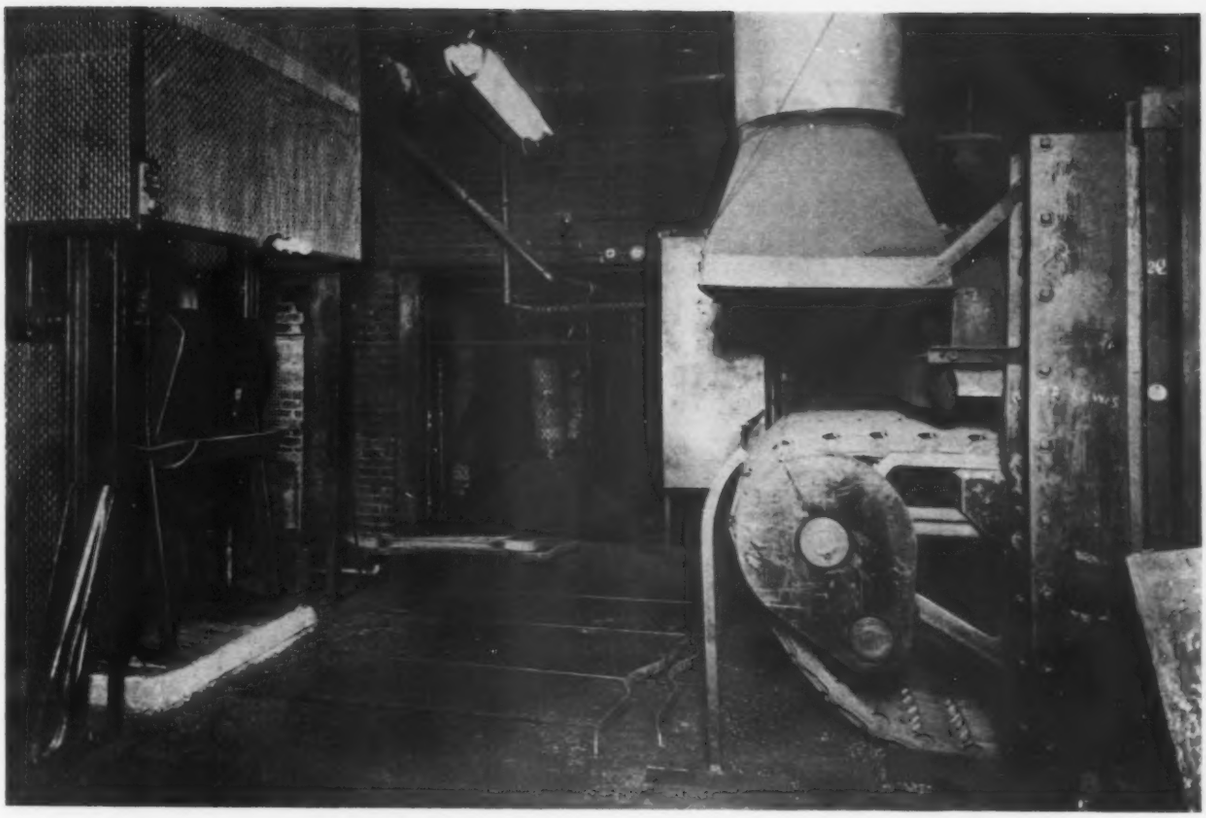
The furnace is constructed with an overhead combustion chamber, separated from the work chamber by a perforated arch, which acts as an accumulator and distributer for the heating gases. The gases are withdrawn from the furnace by means of flues in the side walls, which connect with cross flues under the hearth. This arrangement assures a thorough circulation of the heating gases under the hearth floor and around the beams.

As previously mentioned, this unit is fired with city gas, the burners being arranged in pairs. Each pair of burners is set at an angle so that the flames converge as they enter the combustion chamber. One burner on each pair is controlled by means of a Dixon valve through a Leeds & Northrup recorder controller and thermocouple located in the work chamber immediately under the burners. With this arrangement one burner of each group is running constantly while the other burner is used for control and is either on or off, as the heat condition in the furnace demands.

Parts being heat treated are brought up to 1710 deg. Fahr. during their travel through three-fourths of the length of the furnace, allowing one-fourth of



*Water Jacketed Quenching Vats Are Conveniently Located. At the left is a special press the platens of which can be lowered into an oil bath*



*A Chain Conveyor Transports Bumper Parts Through the Drawing Furnace*

the travel time for soaking. The temperature is controlled within 10 deg. Fahr. The length inside of the furnace is 22 ft., and the time of travel through the furnace is 20 min., giving a rate of slightly more than one foot a minute.

### Special Press Prevents Distortion During Cooling

Not all parts are completely formed before passing through the high-heat furnace. Therefore a hydraulic press is located near the discharge end of that furnace. The heated parts are drawn through side doors at the end of the furnace, and, if they have already been formed, they are immediately quenched. If additional press work is necessary, the piece is placed, while hot, in the hydraulic press. After the dies have been closed, the platens are lowered into a vat of oil. In this way the part cools while being held by the dies, and distortion resulting from cooling is avoided.

Parts that do not require press work after heating are removed from the furnace and cooled in oil tanks, one of which is located at each side of the furnace at the discharge end. The oil is agitated by a motor-driven pump, by means of which it is delivered to a radiator-type cooler located on the roof of the building. Normally the temperature of the oil bath is held below 100 deg. Fahr. The oil tanks are water-jacketed.

A monorail air hoist is used to transfer the hardened product from the oil drain boards to the draw furnace, which is of the under-fired three-quarter muffled type. It is equipped with a continuous chain grate type of conveyor for handling the work. The conveyor consists of three strands of extra heavy malleable iron roller chain, upon which are mounted especially designed malleable iron interlocking flights. The return strand is directly underneath the furnace, where it is protected from rapid cooling action so that it returns to the furnace well up to heat. This furnace is likewise fired by gas burners, arranged in pairs and controlled as on the high-heat furnace. The drawing temperature is maintained between 900 deg. and 1000 deg. Fahr. The inside length of the furnace is 23 ft. 7½ in., and the time of travel of a single part through it is 25 min., or at a rate of slightly less than a foot a minute. Maximum temperature of the part is reached about 5 min. before it is discharged from the furnace.

Both furnaces have extra-heavy fire brick walls, and they are insulated with 4½ in. of cork insulation brick. The conveyors are driven through fully inclosed spur and worm gear speed reducers, direct-connected to motors. Both furnaces were built by the McCann-Harrison Corporation, Cleveland.

As each part is taken from the conveyor bed of the drawing furnace it is closely inspected for defects and is subjected to a hardness test. If it meets specifications, it is placed on the conveyor for delivery to the grinding room.

### Novel Use of Swing Grinders

A point of interest in the grinding room is the use made of swing grinders for finishing the flat surfaces of bumper parts. Opposite each grinder is an oscillating table provided with an automatic ratchet device which gives the table a lateral motion. A number of the bumper parts are secured to the table, and the swing grinder is lowered. Power is applied to the table, which moves backward and forward in a plane at right angles to the axis of the grinding wheel. When the table reaches the end of its travel in one direction and stops momentarily, preparatory to moving in the opposite direction, it is ratcheted to one side so that the grinding wheel will not retrace the path it has just been working on.

---

A 6500-hp. reversing blooming mill motor for the South Works, Illinois Steel Co., and a 4600-hp. reversing roughing mill motor for the Tata Iron & Steel Co., Jamshedpur, India, will be furnished by the Westinghouse Electric & Mfg. Co. Each order includes a motor-generator set and switching equipment.

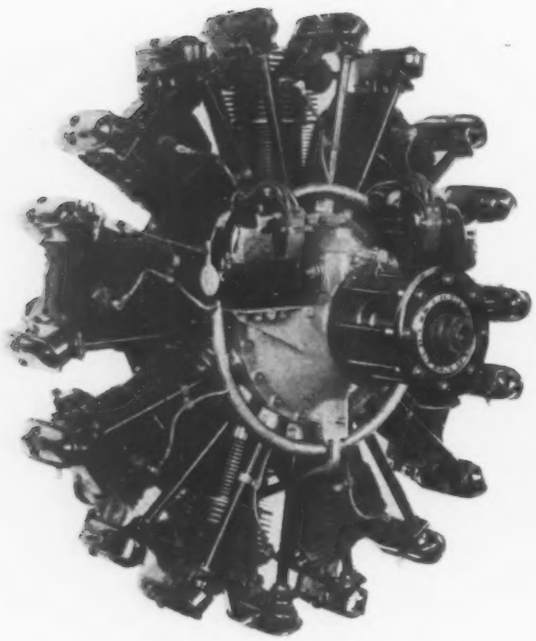
---

The Lake Superior Mining Institute will hold its twenty-sixth annual meeting in the Oklahoma-Kansas-Missouri zinc-lead field upon invitation of the Tri-State Zinc and Lead Ore Producers Association. The tentative date is April 1 to 6.

# Wright "Whirlwind" a High

## Interchangeability and Important Accomplish Materials and

BY FAY LEONE



WHILE crossing Forty-fourth Street in New York on my way to my office to write this article I was attracted by a large crowd gathered in front of a window. Evidently there was something of great interest inside. I stopped to see what it was. By skirting the crowd which extended well out into the street, I finally gained a point of advantage from which I could see the object upon which their attention was focused. It was a Wright Whirlwind engine. Never have I seen a piece of mechanism which has aroused greater curiosity or commanded more sustained interest on the part of the observers. Truly, Colonel Lindbergh has done a wonderful thing in making America air minded. Naturally the 508 lb. of refined mechanism which created the breeze upon which he flew to Paris comes in for its share of credit and attention.

The Wright Whirlwind, the "W" part of the "We," is well worth careful examination and study. Its story is a story of the triumph of man and metal over the elements. A romance of "making metal fly" which should inspire every metal worker with a new regard for his calling and instill in the minds of the youthful apprentices a still higher regard for engineering thinking and accurate, clean execution.

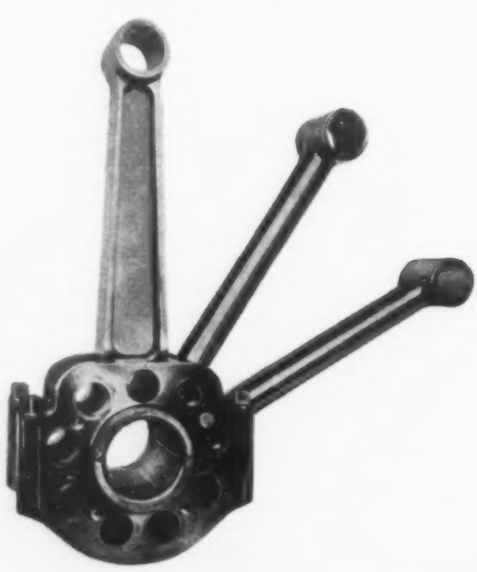
The Whirlwind engine, familiarly known in the Wright Aeronautical Corporation shop as the J-5 series, is a nine-cylinder air-cooled, static, radial type. It operates on the familiar four-stroke cycle principle. Calling the top cylinder No. 1, the firing order, indicated in a counter-clockwise direction, is 1-3-5-7-9-2-4-6-8. The cylinders have a 4½-in. bore and 5½-in. stroke. Although rated normally at 200 hp. at 1800 r.p.m., the average power developed at this speed is about 223 hp. The engine weighs, dry, 508 lb. Its length is 34 in. and the diameter over all, 45 in. The displacement is 788 cu. in. and the compression ratio, 5.2 to 1. The guaranteed fuel consumption is not more than 0.60 lb. per hp.-hr. at the rated horsepower and the guaranteed oil consumption not over 0.025 lb. per hp.-hr.

### Nine Cylinders Drive Single Crankshaft

Before going further it may be interesting to know how each of the nine cylinders, which are equally spaced around the crankcase and operate in the same vertical plane, manages to transmit its power to one revolving crankshaft upon one end of which the propeller is fastened. Perhaps no question is asked oftener of the Wright engineers than "How do you get all the cylinders to work on the same crankshaft?" Well, here is the way it is done. It's very simple after all. A master connecting rod, shown in an accompanying illustration, is fastened in the usual manner at the top end to the piston pin of cylinder No. 1 and at the bottom to a comparatively large crankpin of a single-throw crankshaft which runs in bearings mounted in the crankcase. This master connecting rod carries at its lower end eight minor connecting rod bearings spaced at equal intervals around the periphery and the articulating rods, eight of them, running to the other eight cylinders operate through these minor bearings on the main crankshaft. An inspection of the illustrations will make this operation clear. So carefully has the assembly been designed that even with the very little clearance allowed the mechanism functions perfectly.

This "starfish" type of motor lends itself to many unique points of design and makes possible an interchangeability of parts which is quite remarkable. Also an accessibility which is never more appreciated than in the case of an airplane. The entire Whirlwind motor may be dismantled and inspected or overhauled without taking it out of its airplane mounting. The valve mechanism, ignition and carburetion system are open and in plain sight; they can be reached without difficulty and the equidistant spacing of the cylinders around the circle makes carburetion problems which occur in the ordinary vertical or V-type horizontal engine comparatively easy of solution in this form.

The cylinders are made of high-carbon steel forgings from which the cooling fins are integrally machined in a manner to be explained in a later article. The cylinder head with its integral cooling fins is cast from aluminum-alloy known as the "Y" alloy, composition of which is approximately: Copper, 4 per cent; nickel, 2 per cent; magnesium, 1.5 per cent; iron, 0.75 per cent, and silicon, 0.50 per cent, with the balance aluminum. This casting carries the two valve seats and two spark plug openings. The combustion chamber is hemispherical in shape, the valves are inclined to the axis of a cylinder by an angle of 35 deg. The

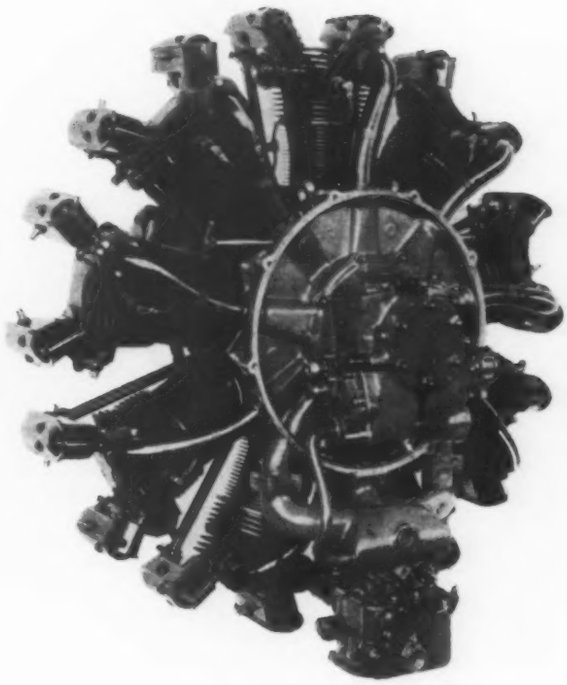


*Mechanical engineer, New York, and former editor of the *Aircraft Yearbook*. This is the first of a series of articles on the Wright Whirlwind engine; the next will describe some of the methods of manufacture.

# Achievement in Engineering

## Accessibility of Parts Are ments—Some Data on Operating Costs

FAUROTE*

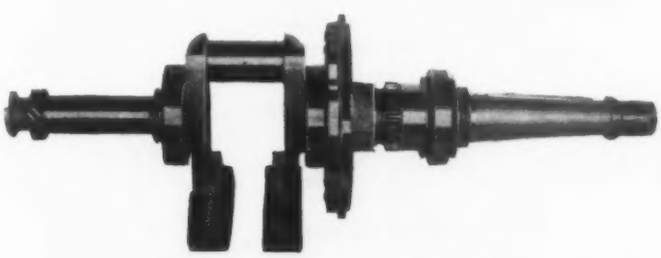


spark plugs are screwed into bronze bushings, diametrically opposite, in the sides of the combustion chamber, on an angle of 10 deg. to the crankshaft axis. The pistons are of heat-treated cast aluminum-alloy and carry four rings, the three at the top being compression rings and the one at the bottom an oil scraper. The piston pins are of hardened alloy steel (S.A.E. No. 6150 or S.A.E. 3250). They are the full-floating type with an aluminum alloy plug in the end to prevent scoring of the cylinder walls. The connecting rods, that is, the master and the eight link rods, are machined from a chrome-nickel steel forging (S.A.E. No. 3140). The master rod is provided with a steel-backed babbitt-lined bearing at the crankshaft end, and the piston pin and knuckle pin bearings of the link rods are of bronze.

**Crankshaft a Chrome-Nickel Steel Forging**

The crankshaft is of single-stroke counterbalanced type, and is a chrome-nickel steel forging (S.A.E. No. 3140), machined all over. It is hollow throughout its length, the channel being used to distribute oil to all parts of the engine. The counterweights are bolted to extensions of the crank-cheek. There are four bearings, a ball thrust bearing, two main ball bearings and a plain bearing in the rear crankcase section where the oil is admitted. Cam and accessory drive gears, the ball bearings, starting dog, oil slingers, and propeller-hub key are attached to the crankshaft.

The crankcase proper is made up of five aluminum alloy castings. The front section includes the thrust bearing housing, magneto bracket and the magneto and cam driving gears. The intermediate section contains the cam and valve tappet mechanism and the housing for the front crankshaft bearing. The main section which provides the pads for the attachment of the cylinders contains the flange for mounting in the airplane and the housing for the rear crankshaft bearing and intake passages. The rear section contains drives for oil pump, fuel pump, gun synchronizers and tachometers. It also provides a mounting for the engine starter and the housing for the main oil strainer. The intake manifold and oil sump section is an aluminum casting containing space for the accumulation of oil, a flange for mounting the carbureter and the intake passages.



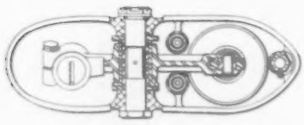
*THE Master Connecting Rod and Two of the Eight Articulating Connecting Rods Are Shown at the Left. The master rod is fastened at the top to the piston pin of cylinder No. 1, and at the bottom to the crankpin of the crankshaft shown above.*

*The assembled engine, front and rear views, is shown at the top of these pages*

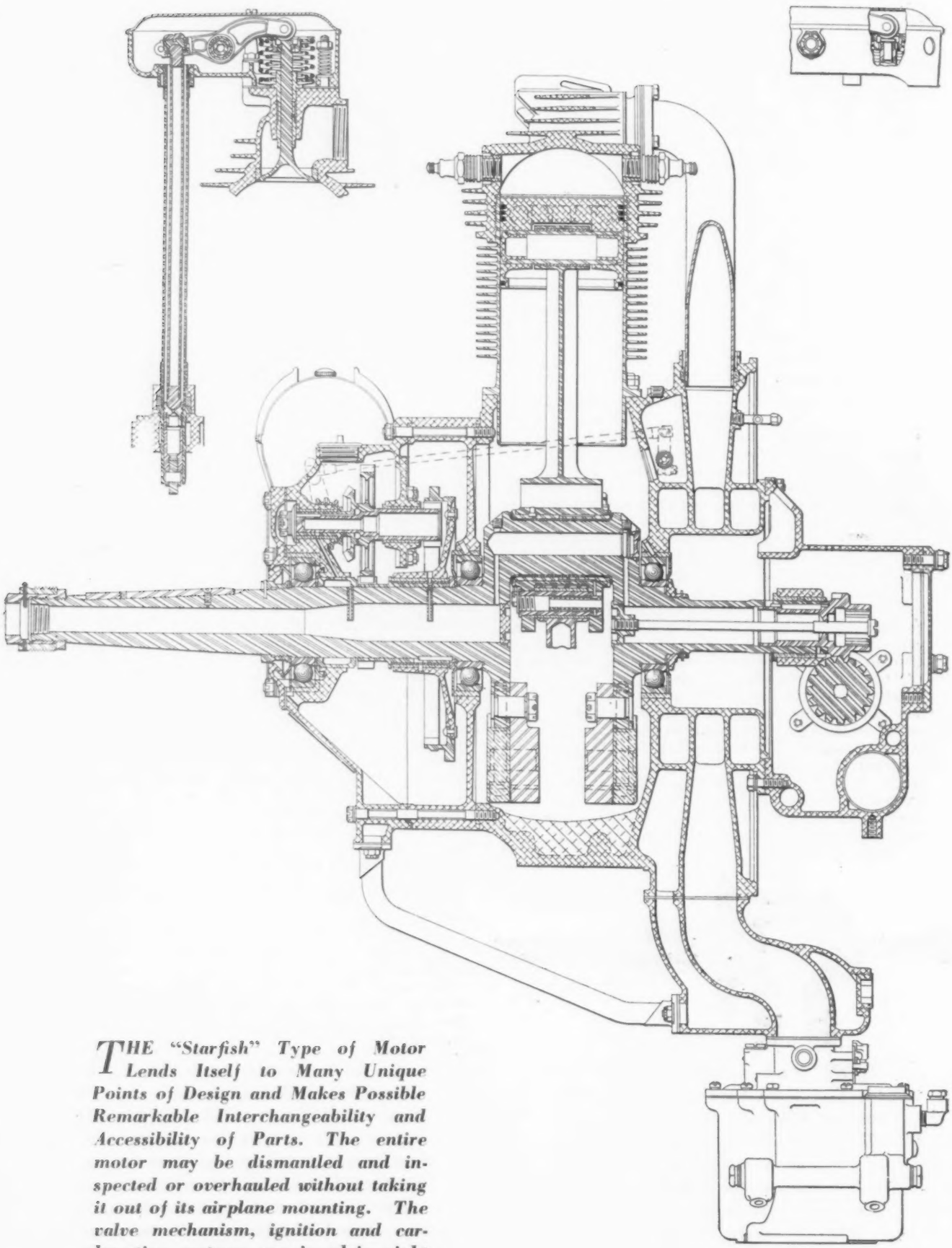
Inlet and exhaust valves are set at an angle of 70 deg., their heads are flush with the combustion chamber and they rest in valve seats of aluminum bronze of rectangular cross-section. These angular rings are shrunk into a recess in the cylinder head and then rolled over at the top. The valves are of the tulip type and are machined from tungsten steel, the exhaust valve being salt cooled to prevent overheating. Each valve is held in place against its seat by three concentric helical round steel wire valve springs and is operated by a valve mechanism actuated by a cam located in the intermediate crankcase section, through cam followers of the roller type, a push rod and rocker arm; all of which are inclosed. The cam unit runs in the opposite direction from the crankshaft and at one-eighth its speed. It consists of a hardened steel ring with eight lobes on the outside and an internal gear cut on the inside. This is riveted to an aluminum hub riding on a sleeve, which is keyed to the crankshaft. The cam followers are of the roller type operating in forged steel bushings which are a push fit in the intermediate crankcase section. The upper ends of the followers contain hardened steel sockets into which the lower push-rod ball fits. The push rods are of nickel steel tubing with hardened steel balls forced into either end. The upper balls fit into hardened steel cups which are a loose fit inside the clearance adjusting screws at the outer end of the rocker arms. The valve gear is inclosed by rocker arm housings which form the support for the rocker arm pins. Pressed steel covers are used on the rocker arm housing and the push rods are inclosed by tubular steel housings. The intake valve opens 8 deg. early and closes 60 deg. late, while the exhaust opens 60 deg. early and closes 8 deg. late.

Two Scintilla magnetos mounted on the front section of the crankcase supply the ignition, through a duplicate set of heavily insulated high-tension wires inclosed in metal ignition manifold rings, from which two separate wires are taken to each cylinder, one on either side.

A special type of three-barreled Stromberg carbureter has been fitted to this engine and the crankcase has been cored with channels which serve as intake manifolds; the three sets, of three cylinders each, taking their gas from these three annular pas-



*TRANSVERSE Section of the Wright "Whirlwind," J-5 Series, Engine. It is a nine-cylinder, air cooled, static, radial type and operates on the familiar four-stroke cycle principle. The length is 34 in. and the diameter overall, 45 in.*



*THE "Starfish" Type of Motor Lends Itself to Many Unique Points of Design and Makes Possible Remarkable Interchangeability and Accessibility of Parts. The entire motor may be dismantled and inspected or overhauled without taking it out of its airplane mounting. The valve mechanism, ignition and carburetion systems are in plain sight and can be reached without difficulty*

sages in the main crankcase section. The carbureter is fastened to an oil-jacketed manifold sump attached to the bottom of the crankcase main section.

### Lubrication System Unique

The lubricating system is unique. There are three oil pumps of the gear type assembled as a unit located in the crankcase rear section. One of these pumps sucks oil from a tank behind the engine which carries the supply and delivers it under pressure to an annular groove around the rear crankshaft bearing. From this groove the oil enters the crankshaft and then passes through the various channels to the crankpin, knuckle pins, cam and magneto drive bearings. Oil collecting in the crankcase is returned to the oil tank by the other two pumps which clear the rear crankcase section and the main section sump. Oil collecting in the front crankcase section drains to this sump through an external pipe. Thus the lubricating system is of the pressure type except for the cylinder walls and accessory drive gears which are lubricated by splash and spray, the one exception being the rocker-arm pin which is provided with grease gun connection.

### Air Heater Operated from Pilot's Cockpit

Pilots' experiences have shown that a carbureter air heater is needed at times to prevent the formation of frost and ice in the carbureter during cold weather operation. Therefore, an air heater is provided which can be operated from the pilot's cockpit by a valve allowing the adjustment of the air temperature entering the carbureter. This heater is of cast aluminum-alloy and is attached to the carbureter by means of six machine screws. There are also provisions for the attachment of a pump so that the fuel may be delivered at the carbureter at any pressure required for successful operation. Provision is also made for two tachometer drive connections and for two oil thermometers. One thermometer is located in the oil cooling sump surrounding the carbureter manifold and indicates the temperature of the oil as it leaves the engine; the other, located in the oil strainer cover, gives the temperature as it enters. Incidentally the oil temperature, under normal conditions of flight, is not allowed to exceed 180 deg. Fahr.

Various other devices, such as self-starters, starters of the geared hand type with booster magneto of the concentric inertia type, either hand or electrically driven, may be attached. These starters are equipped with torque-overload releases to prevent abnormal stresses in the mechanism should the engine backfire while starting. For machines intended for military service Nelson-type machine gun synchronizer drives are available. The company has also developed a special set of overhaul tools and a complete manual covering care and overhauling.

### Direct Cost of Operation Less Than 4c. per Mile

It may be of interest to know how much it costs to operate this engine under normal flying conditions. For a cruising speed of 100 mi. per hr. the Wright corporation gives the following figures as the probable direct cost per mile:

| | Per Mile |
|---|---|
| Fuel, 9-12 gal. per hr., at 25c. per gal.... | 2.50c. |
| Lubricating oil, 2 qt. per hr., at 70c. per gal. | 0.35c. |
| Engine spare parts and overhaul for first 50,000 miles..... | 1.00c. |
| Probable direct cost per mile..... | 3.85c. |

"If it is desired to figure the cost of depreciation, it is generally believed that the Wright Whirlwind may be counted on for 1500 hr. of normal service. This figure is based on proper periodic overhauls, approximately every 200-300 hr. and gives a depreciation charge of about 3c. per mile.

"The above figures are approximate, but there are many cases on record where the costs are less than estimated above. For instance, the J-5 series Whirlwind in the world's record endurance flight averaged 7½ gal. of fuel and less than a pint of lubricating oil per hour. One Whirlwind operator using nine engines averaged 10½ gal. of fuel per hour for over 3000 hr. and with a cost of replacement parts for the first overhaul (300 hr.) of only $6.30 per engine. Another operator averaged $16 per engine for replacement parts on about 300 hr. per engine."

---

A guide book on the design, manufacture and installation of electrical supply equipment has been issued in the shape of the National Electrical Manufacturers' Association Handbook of Supply Standards. This is a revision of previous handbooks of the same series, and is dated October, 1927. There are 231 pages, with 125 illustrations, mostly diagrammatic. The size is 6 x 9 in., and it is sold by the association (420 Lexington Avenue, New York) at $3.50. The book is indexed and contains standards indorsed by nearly 200 manufacturers of a large line of electrical apparatus.

## *Record Performances of the Wright "Whirlwind" Engine*

### *ENDURANCE RECORD*

APRIL 12, 1927, the Wright-Bellanca cabin monoplane, with Clarence Chamberlin and Bert Acosta as pilots, took off from Roosevelt Field, N. Y., and established a world's record endurance flight of 51 hr., 11 min. and 25 sec., exceeding the previous record by approximately 6 hr. The plane took off with a useful load of over 2900 lb., including 385 gal. of fuel.

### *BYRD*

MAY 9, 1926, Commander Byrd and Floyd Bennett flew from King's Bay, Spitzbergen, to the North Pole and return in 15½ hr. A Fokker monoplane, equipped with three Wright Whirlwind engines, was used.

### *LINDBERGH*

MAY 20, 1927, Capt. Charles A. Lindbergh took off alone from Roosevelt Field, N. Y., in his Ryan monoplane "The Spirit of St. Louis" and landed at Le Bourget Airport, Paris, France, 33 hr., 29 min. and 30 sec. later, having covered a distance of 3610 miles. The fuel consumed was 381 gal., and the oil, 11.8 gal.

### *CHAMBERLIN*

JUNE 5, 1927, Clarence Chamberlin, with Charles A. Levine a passenger, completed a non-stop flight from Roosevelt Field, N. Y., to Eisleben, Germany, a distance of 3905 miles, in about 43½ hr. The Bellanca monoplane which had previously established a world's endurance record was used for this flight.

### *MAITLAND*

JUNE 29, 1927, Lieutenants L. J. Maitland and A. F. Hegenberger completed a non-stop flight of 2400 miles from Oakland, Cal., to Oahu, Hawaii, in 25 hr., 50 min. A Fokker monoplane Army transport, equipped with three Wright Whirlwind engines, was used for this flight. The fuel consumed by all these engines was 920 gal., and the oil, 21 gal.

### *BYRD*

JUNE 29, 1927, Commander Byrd, accompanied by Bert Acosta, G. O. Noville and Bernt Balchen, took off from Roosevelt Field, N. Y., in a Fokker monoplane with three Wright Whirlwind engines, for Paris. After arriving over France, they were unable to locate Paris due to the low-lying clouds and heavy rain. Turning back toward the coast, they landed at Ver-sur-Mer, after some 43 hr. in the air.

### *SMITH*

JULY 13, 1927, Ernest L. Smith and Emery B. Bronte took off from Oakland, Cal., in a Whirlwind engined Travel Air Monoplane, and landed on the island of Molokai, Hawaii, 25 hr. and 36 min. later. In this nonstop flight, 2348 miles were covered.

### *STINSON*

IN the National Air Tour, June 27 to July 12, 1927, Edward A. Stinson, in a Stinson monoplane with a Whirlwind engine, won first place with a score of 97 per cent of the possible maximum. This plane attained a high speed of 124.3 miles per hour with 1500 lb. pay load and a total of 2275 lb. useful load. This tour of over 4000 miles, covered 18 States and one Province of Canada. Twelve of the 14 planes competing were equipped with the Wright engines.

# Operating Costs of Industrial Trucks

## Evaluation of Elements Affecting Costs—Influence of Size of Load, Distance Covered and Surface of Floor or Ramp

BY C. B. CROCKETT AND H. J. PAYNE*

ALL direct costs of handling materials by industrial trucks are influenced by operating conditions. Theoretical curves are presented showing the effect on the operating costs of different types of trucks resulting from variations in:

1—Length of haul,
2—Amount of material to be handled,
3—Condition of runways,
4—Number and severity of ramps.

In addition to the above, other conditions having a decided effect on the cost of operation defy analytical treatment. Experience will have to be used in determining their influence in the choice of any type of equipment. These include

5—Width of runways and available space,
6—Fragility of material handled,
7—Special requirements in handling,
8—Labor market conditions,
9—Range of uses for which equipment is employed.

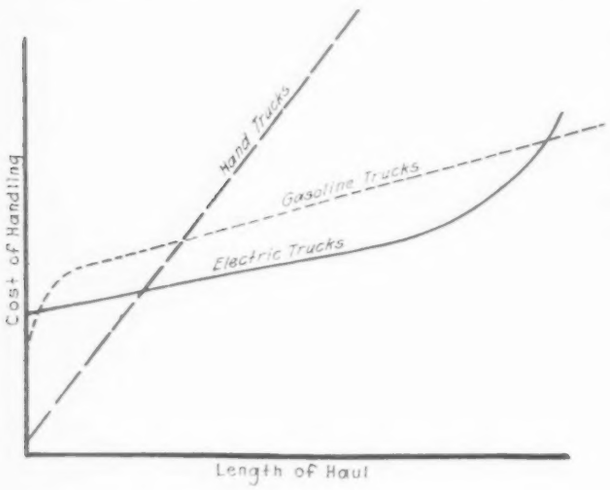



*Fig. 1 (Right)—Analysis of Costs of Operation, with Relation to the Distance to Be Covered*

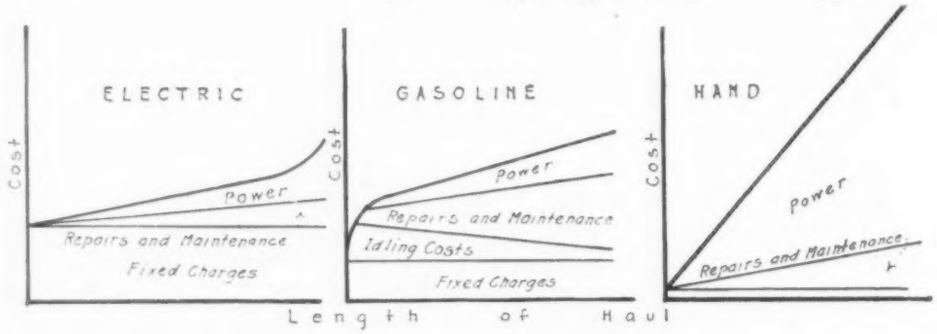



*Fig. 3 (Above)—Total Costs, with Relation to Distance to Be Covered, Arranged for Direct Comparison*

Indirect savings effected by the introduction of a new system of handling or the purchase of new equipment are most readily taken care of by considering them as an indirect cost of the old system. If interest charges on the system under consideration be included in the cost, and all savings are charged as costs of the system where they are *not* realized, the difference between total costs will then be the net yearly profit accruing from the change. If interest charges are omitted, the difference in costs represents the annual savings available to meet the interest charges on the new system.

The amount of time a piece of equipment is in service has a distinct influence on the cost of operation, but not so great as many imagine. Many plant managers say that the high initial cost of electric trucks or tractors prohibits their use, because the equipment would not be in service more than a few hours a day. Suppose a gasoline or electric truck will replace four men at $3.50 a day. Assume (which is seldom true) that the men can be employed productively when not handling material. We then can draw curves to show the relation of cost to days per year or hours per day employed.

[Examination of the sets of diagrams, which are grouped in pairs (showing the building up of costs for each of the three types of operation and then comparing the total costs of the three with each other), indicates that (1) hand trucks are cheapest to operate for very short hauls, electric trucks being cheapest over an intermediate range and gasoline trucks on the longest hauls; (2) hand trucks are cheapest when the smallest amount of material is to be handled, with electric trucks cheapest for larger amounts; (3) gasoline trucks are cheapest (other things being equal) with bad runways, but electric trucks when the surface is better; (4) severity and number of ramps are of least effect on costs of operating electric trucks and greatest effect on those run by hand.]

### *Effect of Various Factors on Operating Costs*

CURVES are presented here not as accurate results of tests made, nor are they true graphical representations of the formulas on which they are based. They are merely a suggested method of approach to the problem of selecting the most economical equipment operating under given conditions.

#### Cost vs. Length of Haul

The first condition to be considered is the length of haul. Letting $Y$ = operating cost and $X$ = length of haul, and assuming that the cost is influenced by this one condition only, the following formula is suggested:

$$Y = A + \frac{B}{X} + C\frac{X}{r}$$

There are three terms in this cost formula:

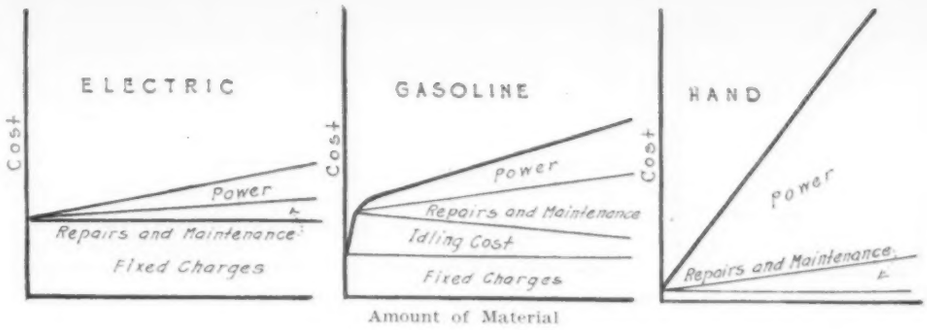
1—Fixed charges, represented by $A$.

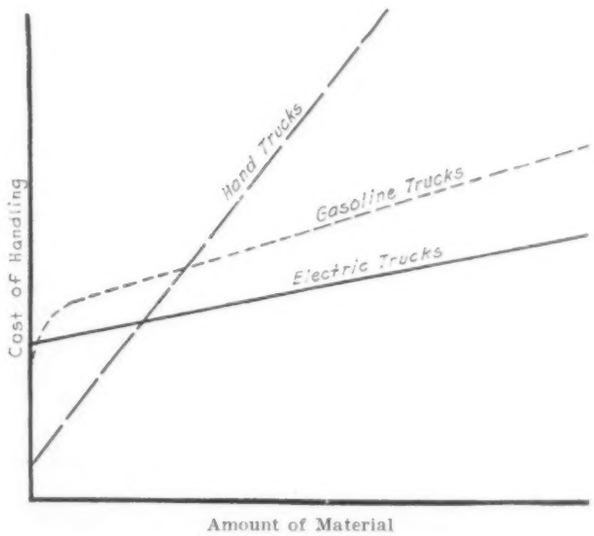
2—Cost of the equipment when idling, being a constant $B$, which represents the hourly cost of the truck when stopping for short periods, times the time idle, which is inversely proportional to the length of haul. The second term may then be represented as $B/X$. For hand or electric trucks $B = 0$.

*Society for Electrical Development, Inc., New York. This is a portion of a paper read Dec. 7, at New York, before the Materials Handling Division of the American Society of Mechanical Engineers.

*Fig. 2 (Right)—Analysis of Costs of Operation, as Affected by the Amount of Material to Be Handled*

*Fig. 4 (Below)—Total Costs, as Affected by Quantity of Material, Arranged for Comparison*




3—The third term is the cost of the machine when moving. This term is a constant $C$, representing the cost per hour when running, corrected so that the variables remaining are only the length of haul $X$ and the speed of the truck $r$. The influence of speed is not seen in the cost until the hauls are of considerable cost.

Analysis of the different costs is shown in the curves of Figs. 1 and 3.

### Cost vs. Amount of Material

The second condition is the amount of material handled. The formula and curves are both similar to those for the length of haul. The fixed charges are the same as before, the idling cost is proportional to the capacity of the truck and inversely proportional to the amount of material. The cost while running is proportional to the amount of material divided by the capacity of the truck. The formula is:

$$Y = A + B\frac{M}{X} + C\frac{X}{M}$$

where $B$ = idling constant
$M$ = capacity of truck
$X$ = amount of material.

The curves are shown in Figs. 2 and 4.

### Cost vs. Condition of Runways

The third variable influencing cost is the condition of runways. The cost here is influenced by the amount of torque necessary at the hub and varies inversely with the size of the wheel. The electric truck has to retain the small wheel for the sake of ease in handling, as the benefits therefrom generally exceed any trouble experienced on bad runways. The curves are given in Figs. 5 and 7; the formula is as follows:

$$Y = A + B + C\frac{X}{DT}$$

where $D$ = diameter of wheel
$T$ = torque available
$B$ = constant for handling on smooth runways
$X$ = coefficient for runway.

### Cost vs. Number and Severity of Ramps

The last external condition whose influence on cost is possible to analyze is the number and severity of ramps. Considering as a base the fixed charges plus operating expenses on a level floor, we may add a variable cost which is added by the ramps. This cost is principally one of power, or more exactly one of overload capacity.

As the storage battery has an overload capacity of 300 per cent or more, the operating cost of electric trucks is little influenced by this item, being merely the extra power cost. In the case of gasoline or hand trucks, however, with a definite overload limit, either units of larger capacity (or smaller loads) must be adopted, or a sharp increase in maintenance and re-

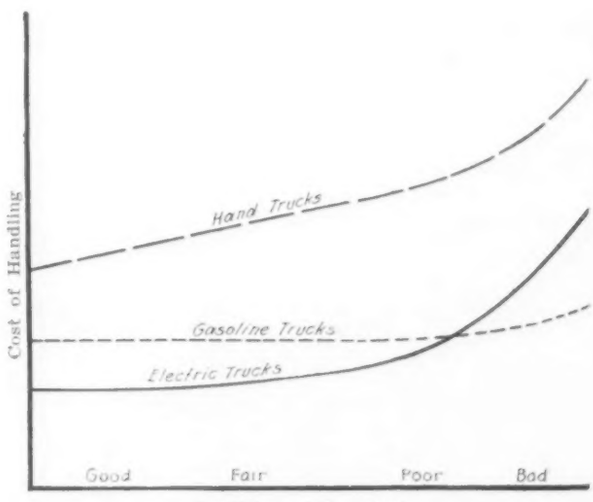
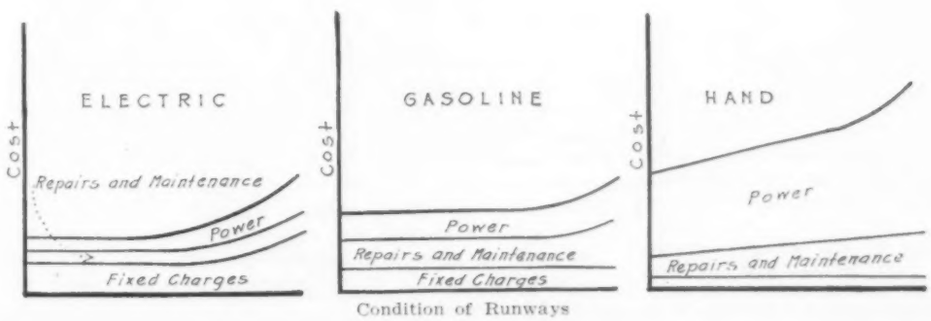



*Fig. 5 (Left)—Analysis of Costs of Operation, as Affected by Condition of the Surface Covered*

*Fig. 7 (Above)—Total Costs, as Affected by Runway Conditions, Arranged for Comparison*



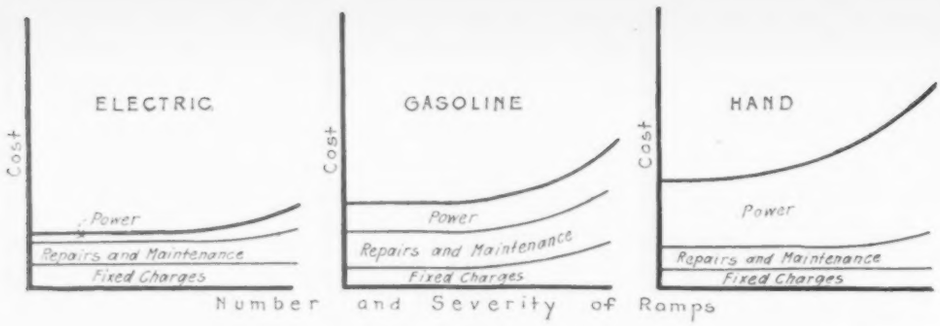



*Fig. 6 (Left)—Analysis of Costs of Operation, as Affected by the Ramps to Be Negotiated*

pairs and power will occur. The curves are given in Figs. 6 and 8, and the formula is as follows:

$$Y = A + B\frac{X}{M}$$

where $A$ = fixed charges
$B$ = cost of operation on level runways
$M$ = capacity of truck for overload
$X$ = coefficient for number and severity of ramps.

[In the discussion following presentation of this paper the authors disclaimed any intention of setting these figures up as final values for the costs sought. They stated that the curves were, rather, of an indicative character, and that circumstances in a particular plant might alter the relationships somewhat. They believed, however, that the curves, and the data on which they are based, are representative of what is commonly found in practice, and that, as such, they would serve as a general guide in connection with considerations of probable costs for a contemplated installation.]

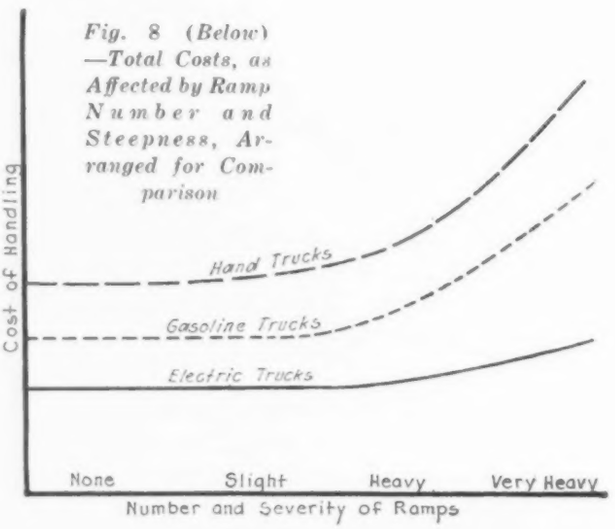



*Fig. 8 (Below)—Total Costs, as Affected by Ramp Number and Steepness, Arranged for Comparison*

# Bridge Wire Tested After 75 Years

## Developed Strength Exceeding Figure Used in Designing the Suspension Cable—Aging Thought to Improve Physical Properties of Drawn Wire

BY H. C. BOYNTON*

AT times we meet the engineer or architect who is doubtful about the permanence of our modern materials of construction. Steel and iron corrode readily, but even if a steel structure could be preserved against rust, he questions whether the high strength given to members by cold work or by heat treatment are truly permanent.

While it is impossible to cite historical data on steel treatment methods which have been in vogue only during this generation, some information is available on bridge wire which has been removed after nearly 75 years' service.

There is in the possession of the John A. Roebling's Sons Co. some wrought iron wire taken from the High Falls Bridge in New York State, which according to our records was erected in 1848 and was in service until removed, which was in August, 1921.

Inasmuch as the records of the tests of wire made in those early days are somewhat fragmentary, we do not have the original tests of the individual wires which went into the cables of this bridge, but from the late John A. Roebling's personal records is secured the fact that the wire was designed to have a tensile strength of 90,000 lb. per sq. in. That the wire is still amply strong for the intended duty is shown from tensile tests of one of these wires, made in August, 1921, which gave the following results:

| | |
|---|---|
| Diameter | 0.153 in. |
| Breaking strength | 1,735 lb. |
| Ultimate strength | 94,166 lb. per sq. in. |
| Reduction of area | 25.4 per cent |

This material was not galvanized or coated with any metal, yet the corrosion of this wire, while marked, was not excessive. There was relatively little pitting of the surface.

Moreover, residents living in the vicinity stated that the cables on the High Falls Bridge had not been painted for at least 10 years. This proves quite conclusively (if further proof be needed) that old wrought iron made 75 years ago is much more resistant to corrosion from ordinary weathering than our present high carbon steel made in acid open-hearth furnaces under strictest supervision.

As far as we can gather from our records the material used in this bridge was imported Swedish or Norway iron. For comparison some No. 9 Norway iron wire was recently drawn in about the same way as the old sample mentioned above, and an average of three tests from three separate bundles is as follows:

| | |
|---|---|
| Diameter | 0.147 in. |
| Elongation in 12 in. | 3.0 per cent |
| Breaking strength | 1,360 lb. |
| Ultimate strength | 80,130 lb. per sq. in. |
| Reduction of area | 28.6 per cent |

This Norway iron wire tests true to form and was given three holes or passes. It is probable that the old wire mentioned above, which had a higher breaking strength in pounds per square inch, was drawn four passes, which wire-drawing, if given to the modern Norway iron wire, would bring its strength to about 90,000 or 95,000 lb. per sq. in.

From the facts above it certainly seems apparent that the cold-worked iron installed 75 years ago has not lost its valuable physical properties since the bridge was erected. In fact, the general opinion among my associates here is that cold-drawn wire gradually grows a little stronger with age. This despite the fact that the process of hardening by cold work involves the fragmentation of the metallic crystals, a large increase in what is called the amorphous phase, the introduction of great internal strains—all of which would be regarded by theoretical metallurgists as elements of structural instability. Yet such steel and iron wire has the most honorable service record of absolute dependability.

*Metallurgist John A. Roebling's Sons Co., Trenton, N. J.

# Modernizing Forging Practice

## Plant Laid Out for Ease in Materials Handling and Straight-Line Production—Auxiliary Service Important

BY F. W. MANKER*

MODERN forging plants offer an interesting study in efficient synchronization in straight-line production of a multiplicity of power, heating and handling units, together with fuel, oil, air, water and steam distribution and utilization. In this scheme mass production and quality of product are the two paramount factors. Neither can in the least be sacrificed to the other. The mechanical problems of forging were solved long ago with power hammers, presses, dies, etc., but efficient and rapid heating of the raw steel is a goal more recently attained.

One of the largest and most modern forging shops has been put into full operation at the plant of Willys-Overland, Inc., Toledo, Ohio. It was built on the site of an old one, which was progressively dismantled without interfering with production.

This shop is so designed that the work progresses from one operation to another with the least amount of "float" trucking and handling. All hammers are served with individual forging furnaces and both are so arranged as to allow the greatest volume of output with the minimum of labor, fuel, power, etc.

Two main buildings, parallel, are built with steel sash sides with rolling steel shutters forming 9 x 20-ft. doors in the lower section of the side walls. This contributes to ease in handling material and parts in and out of all sections and also provides an excellent means of ventilation in the summer.

*Vice-president Surface Combustion Co., New York.

One of these buildings is 80 x 700 ft., while the second is 80 x 540 ft. All material is handled in containers by motor-driven lift trucks, according to a carefully worked out system of routing. Each building is equipped with overhead electric traveling cranes for moving and rearranging equipment, handling dies, etc.

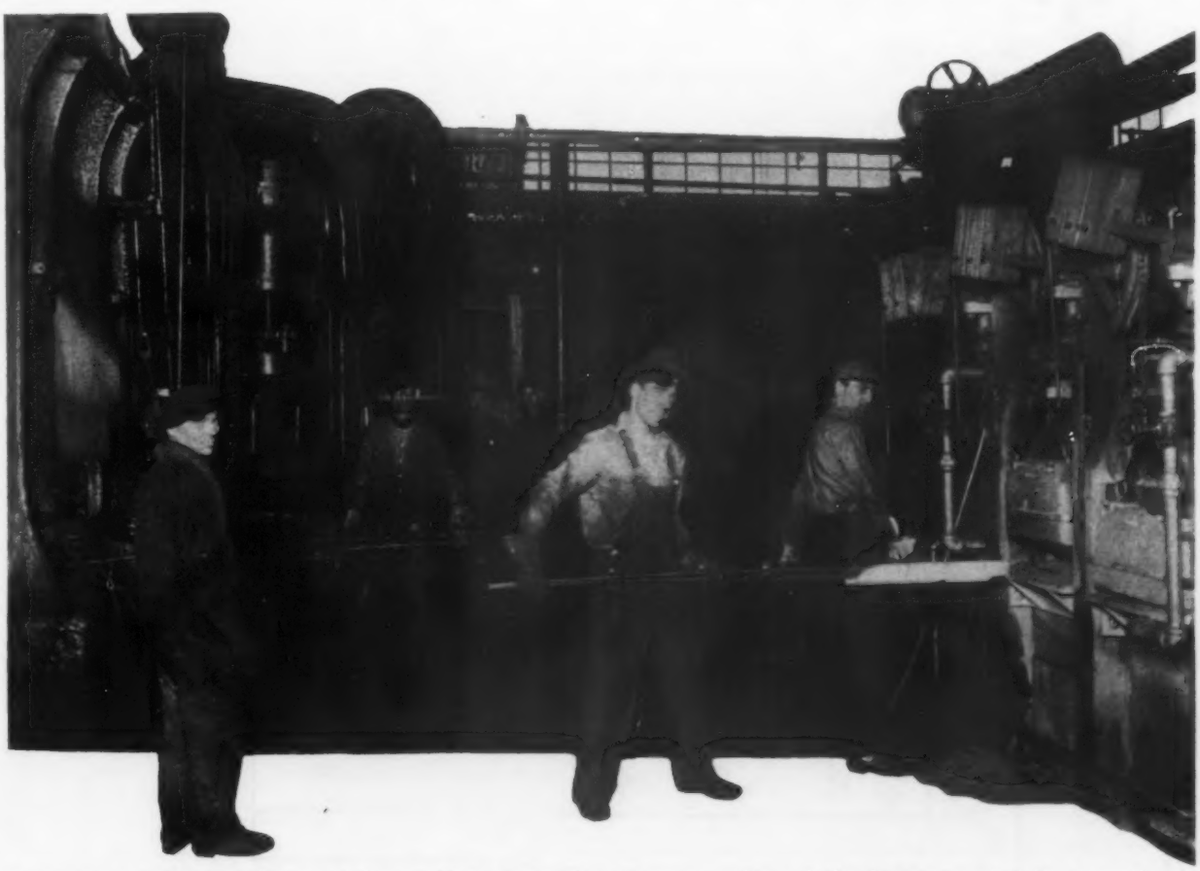
Raw material is brought in on spur tracks direct from the railroad to the steel yards, which are immediately adjacent to the forge shop buildings. These yards are commanded by overhead electric cranes of 45-ft. and 78-ft. span with lifting magnets. They serve the double purpose of unloading material from the cars and of handling the stock into the shear sheds, where it is cut to the proper length preparatory to forging.

Under a portion of the forge shop a reinforced concrete basement 12 ft. deep covers an area approximately 130 x 160 ft. This is used for compressors, oil tanks and the storage of dies, repair parts, furnace material, etc.

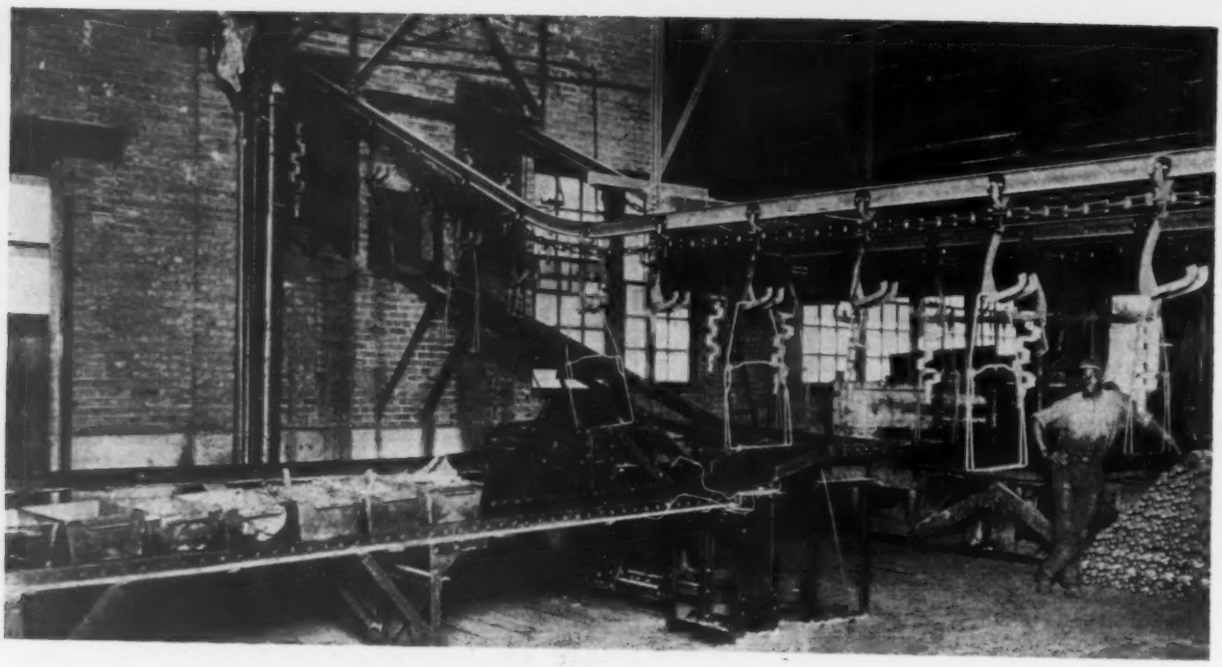
### Separation of Heavy from Light Work

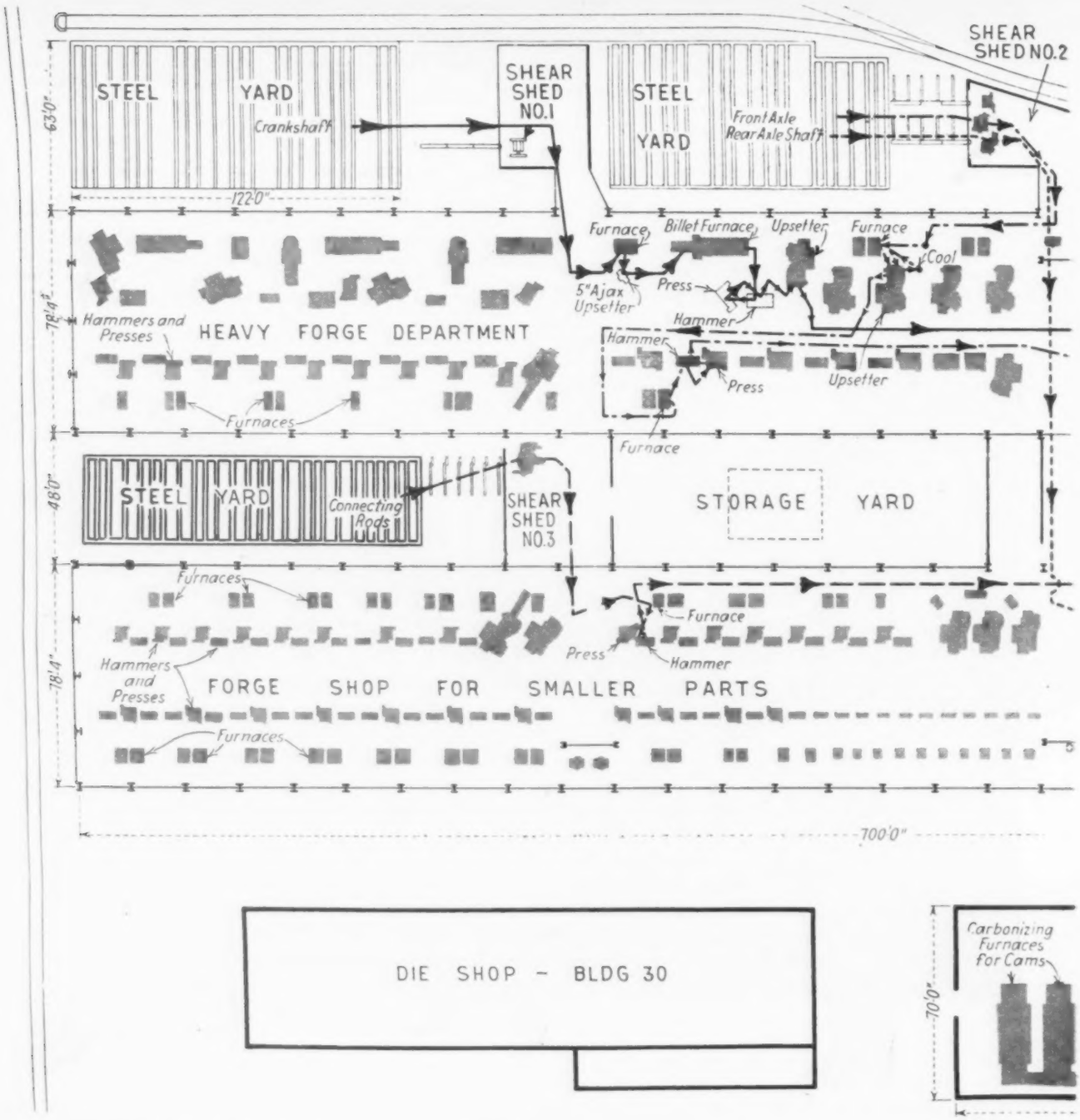
Rear axle shafts, connecting rods, cam shafts, steering worm gears and all miscellaneous parts are forged in No. 1 shop, while the heavy parts, such as crankshafts, front axles, steering knuckles, etc., are hammered out in shop No. 2. To eliminate long hauls on heavy stock, the shear sheds were placed adjacent to No. 2 shop.

In general arrangement each shop is as follows:

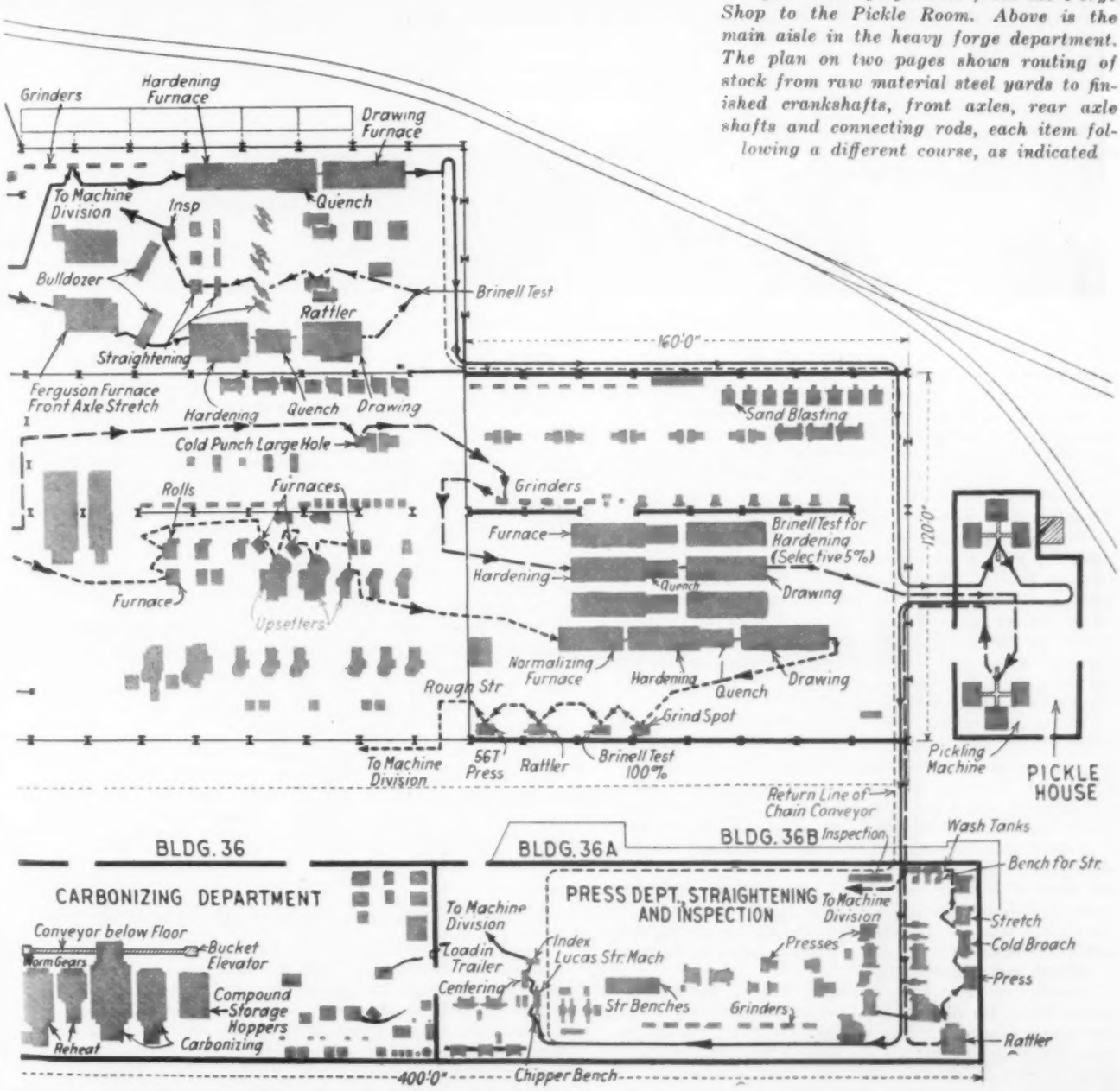


*Removing Hot Blank from Discharge End of Forging Furnace. One of the hammers, at left, is ready to receive it*




SHEAR SHED NO.2
STEEL YARD
Crankshaft
SHEAR SHED NO.1
STEEL YARD
Front Axle
Rear Axle Shaft
122'0"
63'0"
78'4"
Furnace
Billet Furnace
Upsetter
Furnace
Cool
5"Ajax Upsetter
Press
Hammer
Hammers and Presses
HEAVY FORGE DEPARTMENT
Hammer
Press
Upsetter
Furnaces
Furnace
48'0"
STEEL YARD
Connecting Rods
SHEAR SHED NO.3
STORAGE YARD
Furnaces
Furnace
Press
Hammer
Hammers and Presses
FORGE SHOP FOR SMALLER PARTS
Furnaces
700'0"
DIE SHOP - BLDG 30
70'0"
Carbonizing Furnaces for Cams

*ON Opposite Page Is Shown the Conveyor System Carrying Parts from the Forge Shop to the Pickle Room. Above is the main aisle in the heavy forge department. The plan on two pages shows routing of stock from raw material steel yards to finished crankshafts, front axles, rear axle shafts and connecting rods, each item following a different course, as indicated*



along each outside wall is an 8-ft. aisle running the length of the building. Along the inner side of these aisles are placed the forge furnaces. The hammer lines are parallel to the furnace lines and so placed as to leave 16-ft. aisles between and a center aisle of 28 ft., all running the entire length of each building.

Services such as high-pressure and exhaust steam, gas, oil, water and high and low-pressure air are provided through piping located on brackets on the side and end walls directly above the outside aisles, and completely looping the shops. Ordinary city gas, supplied to the plant through a 16-in. main, is distributed to the forge furnaces and heat-treating units in a loop varying in diameter from 8 to 12 in., with branch lines at intervals.

High-pressure steam at 175 lb. gage and 100 deg. Fahr. superheat is brought to the shops by a 14-in. high-pressure main from the power house on an overhead steel bridge. It is distributed through a loop as is the gas. Exhaust steam from the hammers is returned to the power house by a 20-in. line paralleling the steam supply line. At various points in the exhaust line branch lines are taken off to different parts of the plant, where the exhaust steam is utilized in various low-pressure steam heating operations.

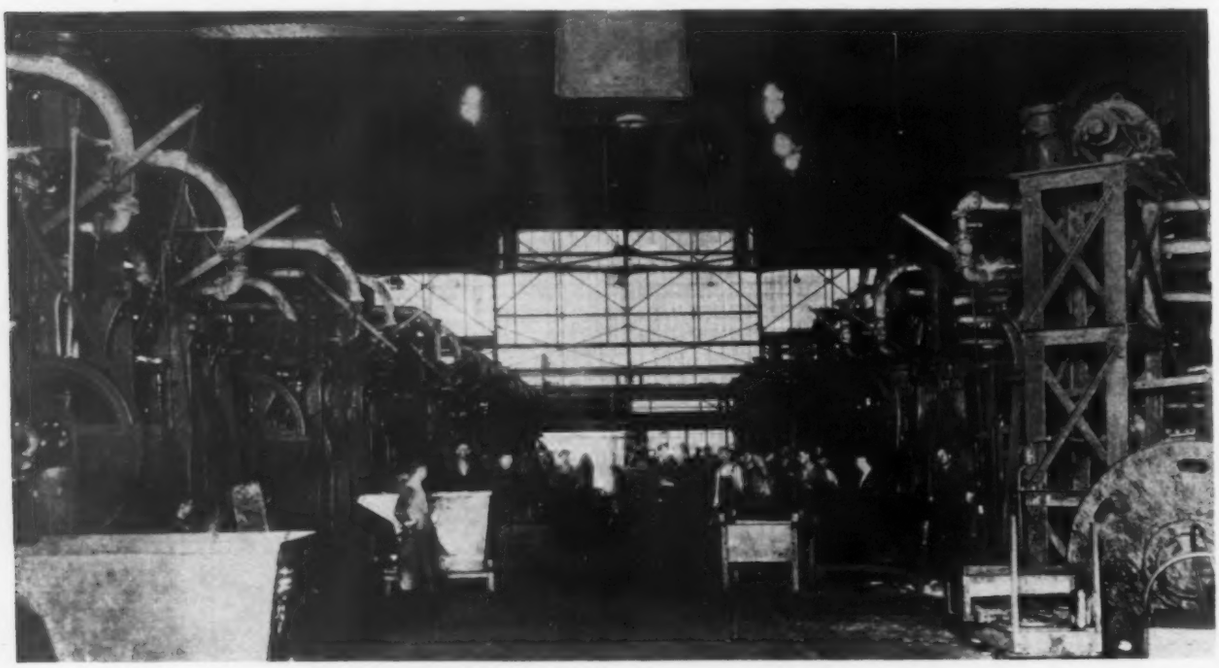
The high-pressure and exhaust steam headers are made up of Van Stone joints placed, usually, at expansion bends. These expansion bends are spaced at intervals of about 200 ft. and all the pipe joints between are welded. A steam plant of 8000 hp. capacity serves the forge shops. Overhead leads from the high-pressure steam loop supply the hammers, while the exhaust steam is returned to the exhaust header through a parallel loop.

Oil is delivered in tank cars and unloaded through gravity lines into five 10,000-gal. steel storage tanks in the basement of the forge shops. Thence motor-driven rotary pumps force it through strainers, meters and heaters into a distribution loop of 2-in. pipe. The oil is circulated continuously through this loop, which is divided into two main parts, each section having a relief valve on one end which maintains a pressure on the loop of 20 lb. at all times. Surplus oil, over and above that immediately used, passes the relief valve, is introduced into the suction manifold of the pumps and again recirculated. The six pumps have a capacity of 30 gal. per minute each.

Leads run from the oil supply line to the oil furnaces, where the oil is manifolded to the burners. From the manifold another line connects with a 2-in. oil return line which forms a loop around the shop, parallel with the others. In this way continuous circulation can be maintained right up to the burners. The oil in the return line drains by gravity into the storage tanks.

Compressors in the main power house, augmented by others in the forge shop basement, furnish high-pressure air through an 8-in. line to a loop around the shops, of from 2 to 6 in. diameter. This air at 100 lb. pressure is used on the upsetters for blowing off scale, and is employed also in pumping water. Low-pressure air for gas and oil burners is provided by eight motor-driven pressure blowers, which deliver the air at 24 oz. pressure into a 20-in. loop. Leads are taken off this air loop to each furnace burner manifold. Low-pressure air is used also for cooling dies on all the hammers, and is supplied through underground mains with an outlet to each hammer base.

The water supply consists of city, well and river water systems, forced by centrifugal pumps into lines which serve the forge shop from underground. This water is used for cooling and for some quenching operations.



*Small Parts Forge Shop. Connecting rod blanks pass through some of these machines*

### Heating and Forging Equipment

Sixty-nine steam hammers of Chambersburg and Massillon make range in size from 1000 to 12,000 lb. Upsetters, trimming presses, bulldozers and hot saws comprise the remainder of the equipment. Each of these is served by a furnace, of which there are approximately 130. Most of these are of the box, in-and-out type and range in size from 18½ in. wide and 19 in. deep for the 1000-lb. hammers up to 57 in. wide and 33 in. deep for the 5000-lb. hammers.

While some of these furnaces are fired by oil, others, designed and installed by the Surface Combustion Co., New York, use gas as a fuel. One type, which is 6 ft. wide, 3 ft. deep and 4 ft. high, gives even heat to the material by firing along the arches with two burners on each side.

The large hammers are served with continuous, automatic temperature-controlled, gas-fired, billet heating furnaces, about 22 ft. in length, designed and installed by the Surface company. Each continuous furnace took the place of four slot-type oil-fired furnaces in the older plant.

## Foreign Trade Meeting at Houston

James A. Farrell, chairman National Foreign Trade Council, has issued a call for the fifteenth meeting of the organization to be held at Houston, Tex., April 25, 26 and 27, and has invited the cooperation of chambers of commerce, boards of trade and other commercial and industrial organizations interested in the development of American commerce abroad. O. K. Davis, 1 Hanover Square, New York, is secretary of the council.

# Rails Made from Bottom-Cast Ingots

## Unusually Free From Segregation and Piping—Roller Straightener Used at Krupp Works an Improvement on Gag Press

BY C. W. GENNET, JR.*

IN the spring of 1926 the Boston & Maine Railroad Co. contracted with Friedrich Krupp, A.G., Essen, Germany, for 11,000 tons of 100-lb. rails of the New York, New Haven & Hartford section, and 4000 tons of 85-lb. rails of the American Society of Civil Engineers section. Basic open-hearth steel rails were to be furnished conforming to the specifications of the American Railway Engineering Association, slightly modified in the requirements for drop testing.

The rails were rolled at the Rheinhausen Works from steel made in 120-ton tilting basic-lined open-hearth furnaces. The charges, mostly all cold, consisted of about 75 per cent mill scrap and 25 per cent pig iron made from Swedish and Morocco ore. Furnace operations were stopped when the bath showed the proper carbon content, and as ferromanganese was added to the furnace the only necessary addition to the ladle was ferrosilicon, and no additions were made to the metal in the ingot molds. It required approximately 10 hr. to make a complete heat.

The ingots were bottom-cast in groups of four. The molds, slurried with tar, stood on a cast iron base plate grooved for runner bricks connected to a central riser. The molten steel from a 1.56-in. ladle nozzle entered the central riser through a hole 3 in. in diameter and flowed thence through 1½-in. holes in the runner bricks to each of the four molds. The ingots cast were 25 in. square at the bottom and 21 in. square at the top, with 4-in. radii at the corners. The ingots were poured 88 in. high for the 100-lb. rail and 100 in. high for the 85-lb., and weighed respectively about 12,500 lb. and 13,500 lb. It required about 15 min. to bottom-pour a group of four ingots, and after approximately 50 min. the molds were taken off and the ingots charged to the pits.

Pits consisted of three groups, each of 16 holes, fired with coke oven gas. Each hole held but one ingot. After about 2 hr. in the pits, the ingots were bloomed and rolled directly into rails.

The blooming was in a two-high 43-in. mill, rolling the top end of the ingot first and reducing it in 21 passes, after six turns, to a bloom approximately 8⅜ by 7⅞ in. After a top discard of about 12 per cent and a bottom discard of 5 per cent, the blooms went without reheating into a three-high, 33½-in. roughing stand and a three-high 33½-in. finishing stand. The blooms received nine passes in the rail mill for the 100-lb. section and 11 for the 85-lb. The rails were sawed to length by a single hot saw, cutting each rail slightly long to allow for milling to 39 ft. Hot rails went to one of the four hot beds directly from the mill and hot saws, being neither spaced nor turned while cooling on the hot beds.

Table I gives the results of the rolling, inspection and testing of the rails. It was conducted by American inspectors and the surface inspection of the Krupp rails was in every way comparable with the practice that would be followed at American mills.

*Table I—Rolling and Testing Results*

| | | Number | Per Cent |
|---|---|---|---|
| Furnace heats made | .... | 149 | .. |
| Ladles cast | .... | 330 | .. |
| Ingots rolled | .... | 3,727 | .. |
| Rails rolled | .... | 30,903 | .. |
| Rails restraightened (following inspection) | .... | 459 | 1.5 |
| Total short rails | .... | 933 | 3.0 |
| Made No. 2 for flaws | 1,877 | .... | .. |
| Made No. 2 for other reasons | 31 | .... | .. |
| Total No. 2 rails | .... | 1,908 | 6.2 |
| Rejected account surface defects | 963 | .... | .. |
| Rejected account other reasons | 18 | .... | .. |
| Total rejected (excepting for tests) | .... | 981 | 3.2 |
| Rejected account failure at drop test: | | | |
| "A" rails | 161 | .... | .. |
| "B" rails | 97 | .... | .. |
| "C," etc., rails | 346 | .... | .. |
| Total rejected at drop test | .... | 604 | 1.9 |
| Total all rejections | .... | 1,585 | 5.1 |
| Made "X-Rayls" | .... | 0 | .. |
| Heats on which rails failed at drop test: | .... | .... | .. |
| "A" rails | .... | 14 | .. |
| "B" rails | .... | 9 | .. |
| "C" rails | .... | 5 | .. |
| Total heats rejected at drop test | .... | 5 | .. |

The chemical composition of the Krupp rails is in line with American practice, except perhaps that the sulphur content is low (average 0.028). The mill was able to keep the carbon content well on the high side of the specified range (0.62 to 0.77).

Table II shows the amount of each classification of rail that was shipped compared with results of Ameri-

*Recently manager rail department Robert W. Hunt Co., Chicago. This article is a contracted form of a paper entitled "The Manufacture of Some Foreign Rails," to be read before the February meeting of the American Institute of Mining and Metallurgical Engineers, to be held in New York.

*SULPHUR prints were taken of rails from a single ingot. At the left is shown the condition of the top of the "B" rail, which showed the greatest variation in sulphur distribution. At the right is the bottom of the "H" rail, appearing to be exceptionally uniform*

can practice from carefully kept figures covering approximately 450,000 tons of rails rolled to this specification at different mills in the United States:

*Table II—Comparison of Percentages of Acceptable Rails*

| Classification of Rail Shipped | Percentage of Total Shipments | |
|---|---|---|
| | Krupp | Average American Practice |
| No. 2 rails | 6.6 | 5.8 |
| "X-Rayls" | None | 2.2 |
| "A" rails | 10.4 | 12.9 |
| Short-length rails | 4.8 | 4.1 |
| High-carbon rails | 39.8 | 30.3 |
| All other rails | 38.4 | 44.6 |

### Outstanding Features of Krupp Practice

One notable departure from American practice was the bottom-casting of the ingots, and the other was straightening all the rails by passing through a roller straightening machine.

Probably the most important requisite of rails for many years has been freedom from pipe and segregation. Various ingot practices and tests have been tried whereby the presence of piping and its accompaniment could be either eliminated or restricted. An extra price is sometimes paid for an abnormal top discard, frequently as much as 25 per cent on each ingot.

The specification under which these Krupp rails were rolled requires that a classification known as "X-Rayls" be made of those whose fractured test pieces show interior defects; meaning, chiefly, piping and segregation. A large tonnage of American rails tested in the past year showed that on the average 2.2 per cent of the total shipments was "X-Rayls," but there was none among the Krupp rails. The Krupp ingots were large, (in fact heavier because taller than most American rail ingots) and the steel was poured very hot, yet there was apparently complete freedom from piping. In view of the fact that a great many observations were made of the fractures of "A" rail test pieces, this is indeed a remarkable result, for which bottom-casting must have been largely responsible.

American steel makers frequently resort to bottom-casting for special purposes, but, so far as known, ingots cast in this manner have not been rolled into rails. To ascertain the actual effect of bottom-casting, small sections were cut from the top end of the top four rails (lettered "A," "B," "C" and "D") and the bottom end of the last two rails (lettered "G" and "H"), all from the same eight-rail ingot, selected at random in the mill at the time of rolling. Sulphur prints and chemical analyses were obtained. Typical results are shown in Fig. 1 and Table III. While considerable segregation is indicated by the sulphur print in the "B" rail, the other rails appear almost free from it and also fairly sound physically.

*Table III—Carbon Analyses of Rails from a Single Ingot*

| Rail | Location of Sample, Per Cent Top to Bottom of Ingot | Carbon at Corner of Head | Carbon at Junction of Head and Web |
|---|---|---|---|
| A | 11.5 | 0.76 | 0.77 |
| B | 21.9 | 0.71 | 0.84 |
| C | 32.3 | 0.75 | 0.80 |
| D | 42.7 | 0.74 | 0.76 |
| G | 84.9 | 0.74 | 0.71 |
| H | 95.3 | 0.73 | 0.72 |

Other rails were analyzed. These indicate that segregation is present in the large bottom-cast ingots, possibly to about the same extent as in the shorter and stubbier top-cast American ingots. However, the number of chemical tests made is altogether too few. So far as actual piping is concerned, the Krupp practice evidently has much to commend it, and it would not be surprising to find that, with the restricted tendency to pipe, the steel would be freer from segregation.

### Straightening Rails

The standard practice of straightening rails in American mills is to use a gag press having fixed supports about 60 in. apart on which the cold, or hand-warm, rail rests. Prior to this straightening process, the rails are passed through a hot cambering machine located between the hot saws and the hot beds. Its function is to put a curve in the hot rails so that they will be as near straight as practicable when cold, in spite of their unsymmetrical cross-section.

It seems quite unnecessary to comment on the probable abuse that a cold rail of high-carbon steel receives when straightening. Each blow is one well beyond the elastic limit of the metal and the gag frequently leaves an impression on the surface of the rail.

The roller straightening machine in use at the Krupp works consists of three 24-in. top rolls spaced 43 in. centers, and two bottom rolls midway between, all power driven, and somewhat grooved to take a little of the rail head and base when in the machine. Power-driven pinch rolls bearing on both sides of the web feed the rails through. All of the rolls are movable, and their position is largely dependent on the operator and his idea of the condition of the incoming rail.

There was no hot cambering machine. Consequently these rails cooled on the hot beds with a head-low sweep amounting to as much as 12 in. The feed mechanism on the entering side of the roller straightener was nevertheless adequate, and rails were fed through one after the other, requiring approximately 15 sec. for a 39-ft. rail to go through. The temperature varied about as in this country, from stone cold to slightly warm.

From the arrangement of the rolls, about 2 ft. of each end of the rail is largely unaffected. Hence, if a short bend or kink occurred near the end of the rails, it had to be eliminated after roller straightening by going to the customary gag press. From 10 to 20 per cent of the rails had to be gagged, but if a hot cambering machine had been in use, it is altogether likely that this number would have been much smaller.

Rails straightened in this roller machine suffered considerable punishment. Of course, they had been strained well beyond the elastic limit, as was proved by the fact that they were quite free from the usual mill scale on the head and base excepting at the ends. The author, however, feels that this method of straightening is likely to be much less detrimental to rails than is the series of from 5 to 15 blows that the average rail receives in a gag press, and also is likely to result in a more accurate line and surface for the finished rail. In short, the roller straightening machine appears to be a desirable advance in the finishing of rails.

---

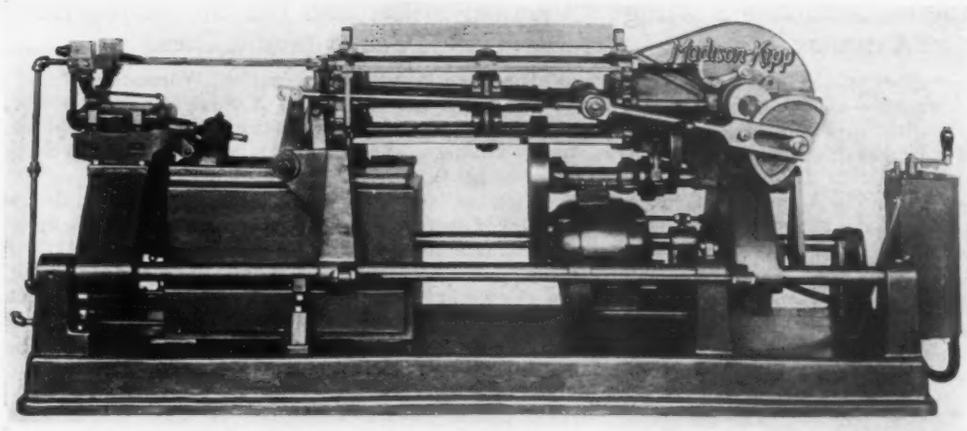
## Proper Conditions for Use of Cobalt Steels for Permanent Magnets

Cobalt steels possess some important advantages for making permanent magnets, but their cost is high and in many cases may be prohibitive, says the United States Bureau of Standards in a new Scientific Paper, No. 567. However, the bureau points out that some applications of permanent magnets are possible only with the new cobalt steels, and in these cases the cost is a secondary consideration. Decrease in size and weight of the magnet are among the important advantages, but if cobalt steels are used, the magnet must be specially designed to make the best use of the peculiar properties of the alloy. The mere substitution of the more expensive material without due attention to the design is almost sure to lead to disappointing results.

Remarkable improvements have been made in magnetic materials and apparatus during recent years, and one of the greatest of these developments has taken place in steels from which permanent magnets are made. The superior qualities are brought about by adding to the steel a certain amount of cobalt. Unfortunately cobalt is, relatively, very expensive, and the new steels may cost from four to 10 times as much per pound as the ordinary kind. It was to determine the actual conditions under which the new steels should be used that the bureau took up this investigation.

---

The Dayton Power & Light Co., Dayton, Ohio, has bought from the Westinghouse Electric & Mfg. Co. a 33,000-sq. ft. radial flow type surface condenser, together with the necessary auxiliary equipment, to serve a 25,000-kw. turbine-generator unit. The condenser will be designed to condense 300,000 lb. of steam per hour and maintain a vacuum of 29 in. of mercury. The auxiliaries include dual-driven circulating pump, two priming ejectors, two steam jet air pumps and one turbine-driven condensate pump.




*Die Castings of a Wide Range of Sizes and Forms May Be Produced*

# Die-Casting Equipment with Automatic Features

## Operation of Dies and Die Mechanism Also Automatic In Air-Operated Gooseneck Type Machine—Die Service Offered

THE Madison-Kipp Corporation, Madison, Wis., has placed on the market the die-casting machine illustrated, one of which has been in use in the company's plant since 1920 for the production of die castings used in its own products. Toolroom facilities for designing and making dies have been developed, and complete die service is also offered by the company.

Operation is entirely automatic. A feature stressed is that in no case is more than one operator necessary, the duties of the operator being confined to manipulating the lever which engages the driving clutch, supplying new metal, and cleaning the die with an air hose. Safety features are provided and the machine can be stopped and reversed with the die in any position. Standard zinc-base and aluminum-base metals are used in the machine. The design is such that the cores can be pulled only in the proper order, and metal cannot be "shot" unless the die is closed and the gooseneck is in casting position.

The initial drive is by a 2-hp. variable-speed motor which permits the machine to be operated at 4, 6, 8 or 12 "shots" per minute. From the motor the drive is through back gears to a worm and worm-wheel which drives to a shaft upon which special dwell crank cams are attached.

The stationary half of the die is attached to the hot plate of the machine and the movable half of the die is mounted on the reciprocating carriage. The latter derives its motion from rods connected to the slotted connecting rods, eccentrically mounted on the crank cams. With the machine in the position shown, with the die open, the cam roller rides over the cam and advances the carriage by a gradually accelerated movement until the die is closed. This occurs shortly before the cam roller reaches the two-lobed section of the cam. The only object of these two lobes is to hold the die closed by exerting pressure against the heavy coiled springs behind the carriage. During this part of the cycle the crankpin moves forward and back in the slot in the connecting rod.

A charge of metal having been "shot" into the die and given sufficient time to solidify, the die is opened. In opening the die, the cam roller leaves contact with the cam and the crankpin, pulling against the rear end of the slot in the connecting rod, draws the carriage and the movable half of the die back to open position.

### Molten Metal Delivered to Die by Air Pressure

It is to be noted that the accelerated movement causes the two halves of the die to come together at a speed sufficient to assure proper engagement, and conversely, it is important to have the highest speed in the cycle for breaking the die open and to start the pulling of cores. The cams provide the accelerated action in the forward movement and the decelerated action on reverse. This allows sufficient time for cleaning of the dies, putting inserts in place, etc.

The gooseneck dips into the metal pot automatically, is filled with metal, and then raised to casting position under the die. At the same time connection is made with the air chamber so that pressure may be applied to the metal for forcing the "shot" into the die. These actions are accomplished by means of push rods, connected to the slotted connecting-rod, which actuate bell cranks that raise and lower the gooseneck. When the gooseneck is raised into casting position, it makes contact with the air chamber and the die at the same time. As soon as the metal has been "shot" the gooseneck is lowered into the metal pot, thus breaking contact both at the die and the air chamber, after the air has been exhausted from the air chamber. Instead of having the gooseneck enter directly into the gate a nozzle-plate is inserted between it and the die. This is intended to prevent any tendency to spread the two halves of the die, thus eliminating production of a fin on the casting.

When the two halves of the die come together, and the gooseneck is in place, air pressure is applied behind the metal in the gooseneck, forcing a "shot" into the die. This is accomplished automatically by means of a cam on the main worm-wheel shaft, which cam makes contact with a roller on a small bell crank or trip and pushes forward the rod connected with the air valve at the rear of the machine. At the side of the machine opposite to the air pressure valve there is a similar mechanism which opens the exhaust valve, so that before the gooseneck is dropped out of engagement with the nozzle plate and die, the air in the air chamber is exhausted.

The machine is equipped with a fire brick lined cast iron furnace and a cast iron pot which can be removed from the furnace compartment. The furnace is also removable if occasion demands.

Operation of the dies and die mechanism is automatic with the operation of the machine. Advancing and withdrawing of all cores and the operation of ejector mechanisms are controlled by cams carried on members known as combination bars. Provision is made for mounting six of these bars, two on each side and two above the carriage on which the movable half of the die is mounted. It is stated that by means of these combination bars and the cams mounted on them, cores can be pulled in any direction and at any angle. Provision is also made for air and water cooling of the dies, for the mounting of splash guards and chutes for carrying away the finished castings. The machine is 10 ft. long, 34½ in. wide and 4 ft. 3 in. high. It weighs 6800 lb.

---

Rochester, N. Y., has been selected for the twelfth annual meeting of the American Gear Manufacturers' Association. Sessions will be held April 19, 20 and 21 at Hotel Seneca. T. W. Owen, 3608 Euclid Avenue, Cleveland, is secretary of the association.

## Automatic Machine for Accurate Spacing and Drilling of Circular Pieces

For closely accurate spacing and drilling of a series of holes around circumferences of circular pieces of various diameters, the Southwark Foundry & Machine Co., Philadelphia, is offering the machine here shown, which is fully automatic excepting for mounting and removing the work. The drilled holes may be of different sizes, and the spacing or indexing mechanism may be set for eight to 36 holes. Two or three machines may be served by one operator, and a marked saving

*Automatic Spacing-Drilling Machine. The spacing or indexing mechanism may be set for eight to 36 holes, inclusive*

in labor is claimed for the machine in the work for which it is designed.

The unit illustrated will drill holes ranging from 1 to 2 in. in diameter in steel, and is adapted for work from 1 to 3 in. in thickness. The table and chuck on this machine are special. The table is 54 in. in diameter and has a large central hole to accommodate work having long downward extensions. It is equipped with four self-centering chuck jaws which may be adjusted for gripping work ranging from 12 to 48 in. in diameter. By moving the table on the bed of the machine to a scale provided for the purpose, different diameters of drilling circles may be selected conveniently. Tables and chucks of other sizes, to suit particular requirements, may be applied to the machine.

A 10-hp. motor having speed variation of 3 to 1 is used to drive the machine, the motor being direct connected by gears and controlled by push button and magnetic contactors. The spindle, 4 in. in diameter, has three automatic drilling feeds and fast return. Downward and upward travel of the spindle is continuous while the machine is in operation, and reversal of direction of travel is automatic. Spacing of the table starts as soon as the point of the drill leaves the work on its upward stroke. The table is spaced from hole to hole, without manual setting of the work for each hole, by means of an indexing mechanism similar to that of a gear-cutting machine. This is operated by a small, independent motor and is said to afford very close accuracy of spacing. Coolant reservoir, pump and piping are regularly provided. The drilling chips drop to the open top bed, beneath the work table, and are raked out at the front end of the bed.

---

The Pacific Coast Steel Co.'s San Francisco office has been moved from the Rialto Building to the Hunter-Dulin Building, Sutter and Montgomery Streets.

## Vertical Miller and Die Sinker for Large Castings and Dies

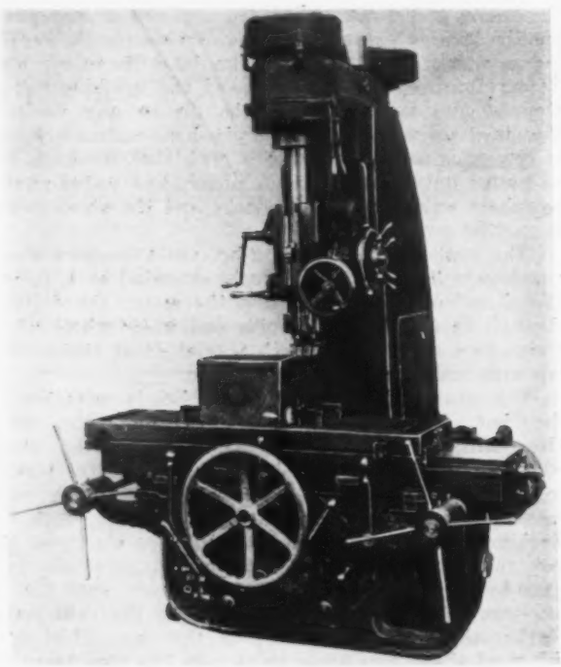
The Reed-Prentice Corporation, Worcester, Mass., is adding to its line a new No. 5 vertical milling and die sinking machine for the vertical milling of large and heavy castings and for the machining of drop forge, body and other dies.

High spindle speeds, necessary for end mills and die sinker cutters, are secured through belt drive to the spindle. Eighteen spindle speeds, ranging from 16.9 to 600 r.p.m., are obtainable and the range of feeds, which number eight for each spindle speed, is from 0.002 to 0.297 in. Power rapid traverse to the longitudinal and cross feeds in either direction is at the rate of 100 in. per min. The spindle is provided with a micrometer stop gage for accurate control of the depth of cut. It is provided with a clutch-type nose and has the taper hole adopted as standard by the National Machine Tool Builders Association.

Timken roller bearings are employed throughout, 70 such bearings being used in the speed, feed and top gear boxes, and in the main spindle bearing. The base is solid and the head and spindle quill adjustable, which construction is intended to provide maximum rigidity. The saddle extends the full length of the table and has four bearing surfaces accurately scraped to the base. Speed and feed gears are of alloy steel, heat treated, and operate in oil.

The spindle is a nickel-chromium steel forging, heat treated, and is mounted in tapered roller bearings.

Longitudinal and cross-feed screws are of heat-treated chrome-molybdenum steel of 50 Shore hardness, and the threads are finished by lapping. Nuts are of special phosphor bronze. The screws are mounted



*Seventy Tapered Roller Bearings Are Used in the Speed, Feed and Top Gear Boxes and in the Main Spindle Bearing*

in tapered roller bearings to facilitate operation of the table and saddle.

Centralized control is a feature, speed and feed levers being located at the front of the machine for convenient operation. The main drive pulley is equipped with clutch and brake for starting and stopping the machine through one lever at the front of the machine. Large diameter handwheels can be supplied in place of the pilot wheels for longitudinal feed of the table by hand. Pilot wheels are disconnected automatically and do not rotate when power feed is engaged. Either single-pulley belt or belt-connected motor drive arrangements may be supplied. For motor drive, a 7½-hp., 1200-r.p.m. motor is recommended.

Some of the important specifications of the machines are: Working surface of the table, 62 x 16 in.; table

travel, longitudinal and cross, respectively, 48 in. and 16 in.; height of table above floor, 33 in. The distance from spindle nose to table, minimum and maximum, respectively, 0 in. and 24 in.; vertical feed of spindle, 9 in.; travel of head on column, 15 in.; throat depth, 20 in.; and distance between center line of spindle to face of column, 11¼ in. The floor space occupied by the machine is 95 x 110 in. and the height is 98 in.

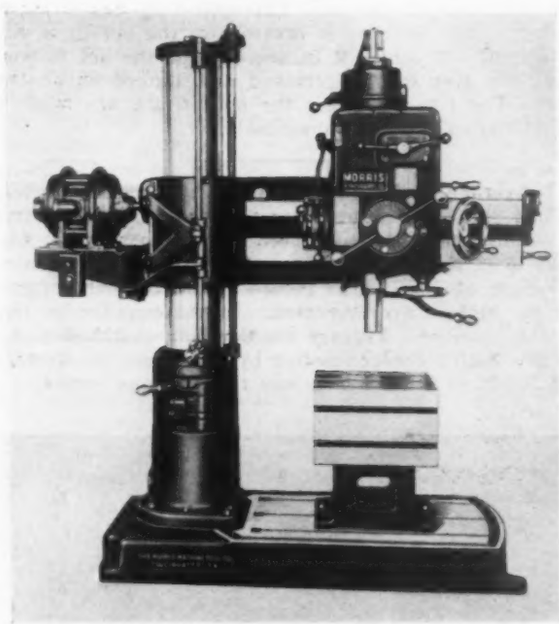
## High-Speed Radial Drills with Taper Roller Bearings

The use of Timken roller bearings throughout, except for the tapping-attachment bevel gears, is a feature of a new high-speed, all-geared radial drill added recently to the line of the Morris Machine Tool Co., Cincinnati. Other features include hardened and broached gears; heat-treated multiple-splined shafts and spindle; multiple-disk clutch, and positive lubrication. The machine is available in 3- and 4-ft. sizes.

Speed and feed changes are located in the head and changes are made through sliding gears by means of convenient levers. Twelve speed changes, ranging from 125 to 1600 r.p.m., and six feeds, from 0.004 to 0.025 in. per revolution, are available. The tapping attachment reverse clutch is of multiple-disk type with the disks running in oil. The tapping-attachment bevel gears are mounted in double-row ball bearings.

The entire head and back bracket also operate in oil, which is supplied by a constant speed pump. The oil is pumped through a sight-feed oiler on top of the head, feeding by gravity through the head to the other parts.

The spindle is mounted on roller bearings in a heat-treated steel sleeve of large diameter with the rack teeth cut integral with the sleeve. Dial depth gage, automatic feed trip and safety friction feed are incorporated in the head.




*Tapered Roller Bearings and Alloy Steel Gears Are Used. Twelve speeds, from 125 to 1600 r.p.m., are available*

The elevating, lowering and clamping of the arm are controlled by a single lever located conveniently at the front of the machine. It is impossible to elevate or lower the arm while it is clamped, as the single lever unclamps the arm automatically before throwing in the elevating device. The elevating speed is constant and can be thrown in at any time. There is a safety friction on the elevating screw and an automatic knockout on the top and bottom of the column. All control levers are centralized. Speed and feed change, elevating and clamping levers can be reached by the operator without changing his position.

One constant-speed motor mounted on the arm and geared direct to the drive shaft is used to drive the machine, including the elevating device. The drills of 3/16-in. size may be run at 80 ft. per min., and the machine has capacity for driving 1½-in. drills.

## Tilting-Arbor Saw Bench for Pattern Shop Use

A tilting-arbor miter saw adapted for use in pattern shops has been brought out by the Oliver Machinery Co., Grand Rapids, Mich. The machine is a built-in motor-driven circular sawing unit, the working top of which remains horizontal and the saw arbor tilts to any angle up to 45 deg. Saws up to 18 in. in diameter may be used, the 18-in. saw projecting through the table 4¾ in. The standard machine is designed to rip work up to 30 in. wide and do miter or dado work, either in the square or in the angular position up to 45 deg.

The base is a one-piece casting, measuring 33 x 39 in. at the floor line, and has built-in dust chute which terminates in a 6-in. round hole for connection to the

*Tilting Arbor Saw Equipped with Universal Table with Rolling Section. There is also a universal tilting micrometer ripping fence and universal gages*

blower system. A hinged door at the rear of the base provides access to all working parts of the machine, without the necessity of removing the table.

Either a plain table, or a universal table having rolling section, can be furnished. The plain table is 44 in. long, 40 in. wide in the main portion, with 18-in. extension arranged so that it can be mounted either on the right-hand or the left-hand side of the table, giving a total of 58 in. of table width. A graduated scale on the top indicates the width of ripping up to 30 in. wide. Slots are provided on either side of the saw for the universal miter gages. The universal table has 15-in. rolling section to the left of the saw, and rolls on ball bearing ways. The rolling table may be moved 4 in. from the saw to permit use of dado saws and special heads. Cross cutting, mitering and grooving up to 36 in. wide may be done.

The motor-on-arbor consists of a 5-hp., 2 or 3-phase, 60-cycle, 220 or 440-volt, ball-bearing shaftless motor mounted directly on the saw arbor. Tilting of the saw arbor and motor unit is by means of a large handwheel directly in front of the operator through suitable gearing. The angle at which the saw is tilted is indicated by a segment and pointer. Means are provided for locking the saw at any tilted position. Push-button motor control is mounted on front of the machine.

The saw arbor is of high-carbon steel ground and is fitted with ball bearings. A dado sleeve with filling collars enables the saw arbor to carry dados up to 4 in. if desired. Safety features are provided, and convenience of operation has been given thorough attention. Ripping fences, miter cut-off gages and other equipment are furnished. The weight of the machine, designated as the No. 88, is 2200 lb., crated.

## Immersion Heater for Plating Solutions

An electric immersion heater for electroplating solutions and other liquids which will not attack lead, and intended primarily for low-temperature heating, has been made available by the General Electric Co., Schenectady.

There is a steel-sheathed helicoil unit covered with a lead jacket which is swaged tight to the steel unit. The terminals are brought into a terminal box suitable for conduit connections. It is made in two sizes, both for a maximum demand of 5 kw., one for 110-volt and the other for 220-volt circuits.

Only the lower portion of the heaters dissipates heat. The upper portion, being inactive, allows the unit to be used in tanks in which the level of the solution may be as low as 10 in. from the top of the tank. The heater can be supplied in different formations.

Portability, ease of installation and non-interference with work in the tank are among advantages claimed.

## Six-Foot Extension Added to Plate Rolls

The lengthening of a set of 34-ft. plate rolls to 40 ft. was successfully accomplished recently at the East Chicago, Ind., plant of the General American Tank Car Corporation. The original machine, a Ryerson-Kling bending roll installed in 1919, had capacity of 34 ft. 2 in. by ¾ in., and was equipped with an upper roll 29 in. in diameter and two lower rolls 20 in. in diameter.

In making the addition it was necessary to dismount the rolls, extend the base, and move out the rear housing. The 6-ft. extensions, made of Mayari iron, were slipped over the journals and welded along the circumference of the joints. Additional center support was furnished and placed at the joints of the lower rollers. The completed machine is shown below.

---

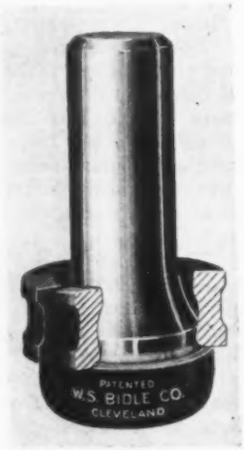
The North mill of the Alan Wood Iron & Steel Co., Conshohocken, Pa., has resumed operation. The mill, which produces blue annealed sheets, has been closed since December, when the mill drives were electrified.

## Rivet Set with Tapered Shank for Standard Hammer Barrels

A new design of rivet set having a tapered shank and a split ring that is pressed on the shank, and permits the use of the set with any pneumatic hammer having a standard barrel, has been brought out by the W. S. Bidle Co., Cleveland. It is claimed that the design of the tool, which is designated as an anti-fatigue rivet set, eliminates breakage of the shanks under hard usage. The new set is intended to provide the advantages of a large radius between the shank and the head in a set that can be used with a standard hammer barrel.

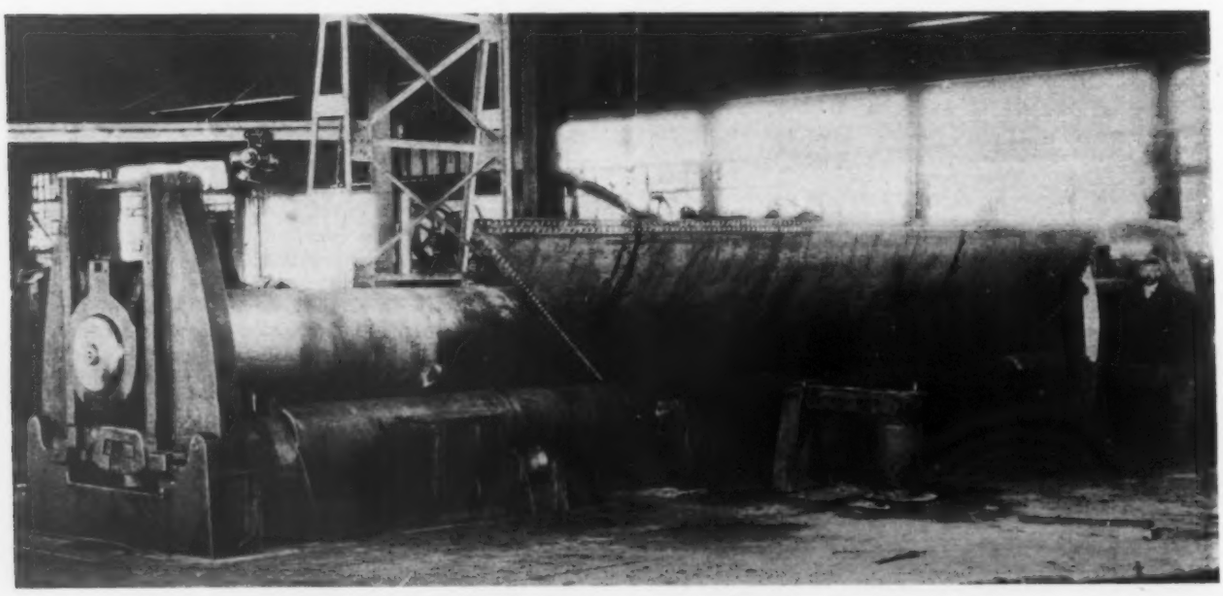
The split ring floats, forms a separator between the barrel of the hammer of the set, and also acts as a buffer. Its weight thus becomes a part of the hammer, not of the set, so that it is stated that, size for size, the anti-fatigue sets are lighter than those of conventional design. The split ring has a spring temper, can be readily pressed on the set in a vise, and will not come off in use. When the set is worn out, the ring can be removed and applied on another set. The sets, including the split rings, are made of heat-treated chrome-vanadium steel.

*Rivet Set Designed to Provide Large Radius Between Shank and Head, and Still Be Usable in Standard Pneumatic Hammers Without Any Changes*




---

Average weekly earnings of factory workers in New York State in December are reported by the Industrial Commissioner to have been $29.57, compared with $28.75 in November. Except for last March, when an average of $29.78 was recorded, the December figure is the highest ever reported. It was equalled by that for September. Average for the year at $29.30 makes a new high record, exceeding by 1 per cent the average of $29.02 in 1926, which was the previous record.



*The 6-Ft. Extensions, of Mayari Iron, Were Slipped Over the Journals and Welded Along the Circumference of the Joint. Additional center support was placed at the joints of the lower rollers*

# BOOK REVIEWS

**Foremanship Training.** By Hugo Diemer. Pages 230, 5 x 7 in. Published by McGraw-Hill Book Co., New York. 1927. Price, $2.50.

Naturally, this book is intended for the particular executive who is charged with and responsible for developing better foremanship—something that is rarely done, despite the importance of training, to say nothing of selecting the liaison officer between employer and non-clerical workers. The need for foremanship training is stressed, although that stress should really be a matter of supererogation.

The foreman's activities are defined along Taylor's machine-shop lines, which really apply to all kinds of production work. The foreman's personality is sketched from various widely different angles—works managers', trainers' and experienced foremen's. The production conference gets a chapter showing how it tends to develop foremen, but weight is laid upon the fact that participation in such conferences does not necessarily make a good foreman.

Foremen's clubs and associations are given attention; for instance, hints are thrown out as to how they should be organized, and a model constitution is reproduced. The statement is made that the international industrial committee of the Young Men's Christian Association will suggest programs and speakers; but, from personal knowledge of the way in which its foremanship course and books for side reading were turned down flat in Philadelphia, Baltimore and elsewhere, I do not concur in the author's recommendation. I am inclined to prefer that assistance be sought from the National Association of Foremen, Dayton, Ohio.

The activities of the conference as regards teaching, training, discussion, etc., are outlined. I may say that if care be not taken with such conferences the result will be, as it has been several times, that no two foremen will speak to each other. The recommendations of the Chamber of Commerce of the United States for foremanship courses are reproduced. The safety movement received, as it should, considerable attention; and there is a chapter recommending giving the foreman information about cost calculation. Industrial engineering in its relation to foremanship is considered somewhat in detail. This matter, however, is put in a manner properly addressed to and intended for the foreman, whereas the book is nominally not for him, but for the superintendent of personnel. R. G.

—

**Organizing the Drafting Department.** By H. F. Church. Pages 133, 5½ x 8½ in. Published by Ronald Press Co., New York. Price, $3.50.

There are so many kinds of drafting departments, the requirements varying so with the industry in question, the capital invested and the production methods, as well as the amount and kind of inventive genius involved in production, that set rules for organizing the drafting department cannot be formulated to cover the entire ground, or to cover any large part thereof other than thinly and unevenly. The human element, also, comes into play. A drafting department may be organized with almost Taylor-like thoroughness, but if there is not good team-work, no disposition on the part of the head draftsman to impart his knowledge and on that of the old hands to aid the newer ones, the department will fail in spots at least, and perhaps as a whole.

The author apparently has had personal experience with a head draftsman chosen on account of "firm loyalty," but I have never heard of such a case. I do know, however, of one head draftsman whose lack of that quality led him to run a private drafting department at home and eventually to set up in business for himself in competition with the employers whose ideas, and those of his own for which his employers had paid, he stole.

One asset for a head draftsman the author omits to mention: a well-filled notebook and a set of pocket books and reference books in the line of the work in question; further, good eyesight and steady nerves, also necessary qualifications for his assistants.

Addresses of publications useful in advertising for draftsmen are given—most unnecessarily, as such lists imply that the head draftsman is not familiar with the trade periodicals in his own line; and the lists are incomplete, as they omit, for instance, the employment bulletins issued by the associated American engineering societies.

One qualification for draftsmen in machinery lines is omitted—the ability to take "mental photographs" of machines and appliances, and make detail sketches thereof afterward; also to evolve kinematical equivalents for patented mechanical movements, as for instance, a "sword-arm" for a slotted link on a locomotive, a filling cam for a cam and spring, or a petcock for an adjustable head on a printing-press buffer.

Isometric perspective, one of the most valuable means of representing three-dimensional objects in one drawing with the same scale in all three axial directions, is not even hinted at, although it is a godsend for pattern-makers and blacksmiths.

Apparently "the" drawing department to be organized is to use high-grade white paper for the master drawing; whereas modern practice is more likely to make the original on Manila paper (in lead pencil, often) and rely on tracing for the master drawing, from which any number of blueprints may be made. This permits changes to be made for successive models with but little difficulty, a new set of blueprints, properly dated, answering for repeat jobs until the new model is in the shops, and for repairs.

R. G.

—

**Metallographic Atlas.** By Prof. H. Hanemann and Miss A. Schrader. Sections 1 and 2, consisting of 16 plates with text (125 illustrations). Published by Gebrüder Borntraeger in Berlin, Germany. Price, 14 marks.

This will eventually be a complete collection of photomicrographs, covering all metals and alloys. It bids fair to be an excellent reference collection of the structures encountered, and has accompanying explanations. These two sections (the first of the series) have to do with steel. Photographs are on photographic paper (not printed through a screen), thus preserving all the detail, and they are of fine quality.

—

**Metallography.** (Die praktische Nutzanwendung der Prüfung des Eisens durch Atzverfahren und mit Hilfe des Mikroskopes.) By G. Berndt and M. V. Schwarz, professors in the technical high schools of Dresden and Munich respectively. Third enlarged and improved edition of E. Preuss's original work. Pages 198, 204 illustrations. Julius Springer, Berlin W.9, Germany. Price, 7.80 reichsmarks in paper; 9.20 in cloth.

A note on the title page says the book is for engineers as well as for superintendents. It might be added that it could be used to advantage by students, laboratory investigators and inspectors who have a smattering of German. Its scope is entirely confined to iron and steel, and much attention is given to those portions of the field which have not yet found their way commonly into text books. About a quarter of the space is given to macroscopy, the examination of large areas of polished and etched specimens by naked eye or under low magnifications. Included is a fine collection of 50 pictures showing segregations, flow lines, strain lines and other abnormalities discoverable by this method. Another excellent section is on the structure of welds made by all the commercial processes.

The selection and reproduction of the photographs

are especially commendable. Without using a paper so highly finished that it glares, the printers have been able to reproduce fine details of structure with unusual fidelity.

—

**Care and Operation of Machine Tools.** By J. W. Barritt. Pages XIII + 290, 6 x 9 in., 160 figures. Published by John Wiley & Sons, Inc., 440 Fourth Avenue, New York. Price, $2.75, net.

Written by a former supervisor of apprentices, Westinghouse Electric & Mfg. Co., Philadelphia, and used for a number of years in his own work, the volume is intended as a text and reference book for high schools, universites and trade schools, and as a part of apprentice training programs. The arrangement adapts it also for home study purposes.

Machine tools dealt with are the drill press, shaper, vertical boring mill, engine lathe, planer, horizontal boring machine and the milling machine—in the order named. More than 70 pages are devoted to the engine lathe, more than 50 to the milling machine, and more than 35 to the planer. The opening chapters deal with lubrication and the emery wheel, respectively.

The text describes the construction of the various units of the standard machine tools listed above, and explains why and how to make the necessary adjustments, which enable the beginner to operate the different mechanisms without injuring himself or the machine. Specific job operations are not considered except for the purpose of illustrating some point in the care and operation of the machine. The subject of tool grinding is treated pictorially. Tools used on each machine are grouped by classes and the shape of each tool and correct grinding are shown. The chapter devoted to milling machines includes data and illustrations of the recently adopted standardized spindle end.

The author writes clearly and gives evidence of practical contact with and appreciation of the needs of the apprentice and other students. The questions and problems listed at the end of each chapter (to the number of 139 and 30, respectively, in the chapter on lathes), add to the worth of the volume.

—

**Plating and Coloring.** (Metallniederschlage und Metallfarbungen.) By F. Michel, director of public testing laboratories, Pforzheim, Germany. Pages 179, 13 illustrations. Julius Springer, Berlin W.9, Germany. Price, 6.90 reichsmarks in paper binding.

This book contains a wealth of information on the subject matter. It is evidently written by a man well informed about the science underlying his art, but who is able to state the essential information in a manner understandable to an artisan not so well favored. Thus, while it describes the operation of a plating vat, it does so without introducing a heavy mathematical consideration of the electrical phenomena. It is unusually complete, discussing the operation of ordinary plating baths and those for the rarer metals as well. Notes on solutions which can be used for plating without the use of electricity are also included. Coloring of the various commercial metals by dipping into suitable solutions is very briefly considered in 20 pages of text. Heat tinting is not mentioned.

—

**Mechanics of Machinery.** By C. W. Ham and E. J. Crane. Pages XIII + 504, 6 x 9 in.; 385 figures. Published by the McGraw-Hill Book Co., 370 Seventh Avenue, New York. Price, $4.00.

The purpose of the authors has been to bring together in a condensed textbook just sufficient material to give the student a working knowledge both of "mechanism" and of "dynamics of machinery" in the time ordinarily available for this work in an engineering curriculum.

The book is divided into two parts, Part I, of 204 pages, being devoted to "Mechanism," and Part II, of 280 pages, to the "Kinematics and Dynamics of Machinery." The chapters on mechanism outline the fundamental mechanisms and the theory of the operation, while the second part of the book aims to enable the student to analyze the forces as well as the motions in the mechanisms or machines dealt with in the first part of the volume. A knowledge of analytical mechanics is presupposed in connection with study of Part II.

The authors did not set out to write a complete treatise. The statement of each topic is necessarily brief, only sufficient material having been included to bring out fundamental principles and methods. Sources of additional information are listed at the end of each chapter. Problems, also given at the end of each chapter, are intended to serve as a guide in presenting the drafting room work.

—

**Handbook of Iron and Steel Foundry Work.** (Handbuch der Eisen und Stahlgiesserei.) Vol. II.: Molding and Pouring. By C. Irresberger. Pages 584, 7½ x 10½ in.; 1702 illustrations in the text. Published by Julius Springer, Berlin, Germany. Second edition, 1927.

While we have not much to learn from Germany in the matter of iron founding, particularly core-making and setting, and perhaps in brand mixing, we can well learn from her analysis and teaching; and this work is an excellent example of infinite detail, carefully arranged and thoroughly explained. We probably excel German practice in molding machines and their use, and in core machines; and the Germans have only comparatively recently learned the use of stripping plates and drawing machines. These facts, however, and the German's infinite capacity for taking pains, go to furnish the reason why the average German foundryman is better than the average American.

Especially to be commended is the clearness of the line engravings, and the abandonment of German Schrift letters in favor of the italic line lettering of the character originated, I believe, in the Westinghouse drafting rooms.

Strangely enough, the "carrousel" machine, of which there are two in the Bavarian State foundries at Amberg, are not mentioned; neither are iron cores, so successfully used in American stove foundries and in making very wide so-called link belts. One-piece iron soil-pipe molds, for straights and elbows, find no place; although the Custer heavy two-part iron molds are given a couple of paragraphs. The Schwarz double-walled, oil-cooled molds (an American invention, which one can see in the Allyne-Ryan foundry in Cleveland) get considerable attention in connection with the mechanical appliances for their use on a large scale. This is a most important process, as castings from the same ladle show much greater tensile strength and bending capacity than those made in sand molds. Centrifugal force, as applied to driving the metal into the finest crevices of the mold, is taken up rather fully, which is necessary; as for each pipe or piston ring diameter, there is a best rotation speed of the machine, also a most practical metal temperature. The "monocast" process, used in the American Cast Iron Pipe Co. foundry in Birmingham, Ala., and another somewhat similar one, in use in Florence, N. J., have attracted the author's attention.

This book is a valuable addition to the first volume, and a worthwhile contribution to foundry literature. It is unfortunate, however, that from the very thoroughness with which it has been written and published, it is not, and cannot be, quite up to date.

R. G.

—

"Steel Roofing—Its Use and Application" is the title of a booklet issued recently by the Sheet Steel Trade Extension Committee, Oliver Building, Pittsburgh, which is designed to sell the idea of sheet steel roofing to the rural dweller. Of particular interest are photographs showing the effect of sheet steel roofs in preventing the spread of fire.

—

The International Nickel Co., 67 Wall Street, New York, has issued Nos. 203 and 204 of its series of booklets on nickel cast iron. The first, entitled the "Economic Value of Nickel in Cast Iron," outlines the various uses of nickel in foundry mixtures and deals in some detail with the results obtained. The other booklet deals briefly with the "Effect of Nickel on Machinability of Cast Iron," and presents an analysis of the difficulties in machining gray cast iron.

## Electric Industrial Trucks and Tractors in Industry

A book of 96 pages and 136 illustrations has been issued by the Society for Electrical Development, 420 Lexington Avenue, New York. Cooperation with 20 manufacturers of electric industrial trucks and tractors, storage batteries and accessories was had in preparing the book, which is devoted to the profitable application of these units in industry. There is a special chapter for each of 16 major industries, of which the steel industry, foundries, machine shops and automobile plants are the four first considered. Others include railroad, marine and warehousing operations, and plants devoted to textiles, leather, rubber, paper, lumber, food products, chemicals and ceramics.

For each of the industries covered, the operating processes and the particular type of truck suited to individual jobs are described. An outline of operating costs is given, together with a tabulation of direct savings effected by employing this type of equipment. Illustrations show equipment in use in various types of service, handling various materials.

—

## Steel Construction

A valuable addition to the engineering handbooks dealing with construction matters is a volume on steel construction, just issued by the American Institute of Steel Construction, 285 Madison Avenue, New York. Bound in limp leather, there are 384 pages full of engineering data, relating particularly to structural materials and their use. New beam and girder sections announced during the past two years by the Carnegie Steel Co. and the Jones & Laughlin Steel Corporation are included, alongside the Bethlehem special H-beams, and the standard beams furnished by all companies making structural material. Hence, the present volume contains a compendium of data regarding all of the principal structural members obtainable.

Part I covers standard specifications, the code of standard practice of the American Institute of Steel Construction and several pages devoted to the historical development of steel and iron as a construction material. Part II takes up the properties of sections, formulas for beam loading and general mathematical tables. Part III is devoted to the strength of building materials and general information related thereto. Part IV takes up the structural shapes and details—both the rolled structural shapes and the built-up sections. It explains the institute's specifications and formulas and gives dimensions, functions and allowable load tables for the various sections described, and data regarding rivets and other connecting media. Copies of the book may be obtained from the institute at $1.50 each.

—

## Ventilation of the Holland Tunnel

Under the title "The Eighth Wonder," a well illustrated book has been put out by the B. F. Sturtevant Co., Hyde Park, Mass., describing the construction of the Holland vehicular tunnel between New York and Jersey City, and in particular featuring the elaborate ventilation arrangement. The fans, in heavy traffic, will handle 84,000 tons of air an hour, or 1400 tons a minute. The book describes the elaborate experiments which had to be undertaken before this system could be worked out and shows by illustration, both half-tone and line-cut, how the job was done.

Most of the book is taken up, however, with a graphic description of the operation of constructing the tunnel. There are 64 pages filled with information and with photographic reproductions showing many of the features of construction work, as well as line drawings giving particulars of size, relations of one part to another and many other pertinent facts.

—

"Getting Results with Ludlow-Saylor Screens" is the title of a catalog issued by the Ludlow-Saylor Wire Co., St. Louis. Sections of the book are devoted to the control of crusher wastes with woven screens, points to consider in choice of sizing screens, reducing costs of crushing and grinding with woven screens, special wire cloths for unusual services, and other subjects. Complete reference data on double crimped wire cloth and woven screens are furnished. Illustrations are ample. The book is handsomely printed and bound.

—

Recovery of waste heat from industrial processes is dealt with by J. B. Crane, engineer, boiler department of the Heine Boiler Co., New York, in the December issue of *Safety Valve*, published by that company. Particular attention is given to the recovery of waste heat in the open-hearth furnace.

---

Production of bituminous coal in January is estimated by the United States Bureau of Mines at 44,200,000 net tons in 25.3 working days. This is a reduction of 23 per cent from the output of January, 1927, with the same number of days; but exceeds the production of December, which was 41,277,000 tons in 26 days.

# *New Books Received*

**Standards and Specifications in the Wood-Using Industries.** 1927. Pages 349, 8 x 11 in., illustrated. Published by Bureau of Standards, United States Department of Commerce, Washington. Price, $1.50.

**The Economics of Installment Selling.** By Edwin R. A. Seligman. Two volumes, pages 357 and 623 respectively, 6½ x 9½ in., illustrated. Published by Harper & Brothers, 49 East Thirty-third Street, New York. Price, $8.

**The Road to Plenty.** By William T. Foster and Waddill Catchings. Pages 231, 5½ x 8½ in. Issued by Pollak Foundation for Economic Research, Newton 58, Mass. Price, $2.

**Postponing Strikes.** By Ben M. Selekman. Pages 405, 5½ x 8 in. Published by Russell Sage Foundation, 130 East Twenty-second Street, New York. Price, $2.50.

**Industrial Progress and Regulatory Legislation in New York State.** Pages 147, 6¼ x 9¼ in. Published by National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, $2.50.

**Manual of Industrial Safety.** By Sidney J. Williams. Pages 197, 5¾ x 8½ in. Published by A. W. Shaw Co., Cass, Huron and Erie Streets, Chicago. Price, $2.

**Cost of Government in the United States 1925-1926.** Pages 294, 6¼ x 9¼ in., illustrated. Published by National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, $3.50.

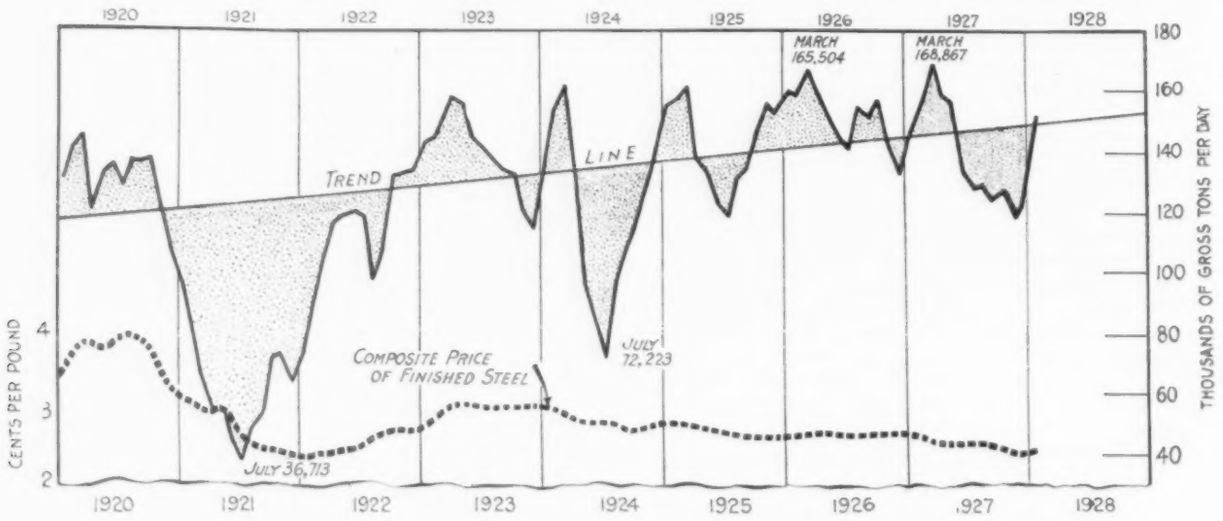
**Mining Engineers' Handbook.** Edited by Robert Peele. Pages 2523, 4½ x 7 in., illustrated. Published by John Wiley & Sons, Inc., 440 Fourth Avenue, New York. Price, $10.

**The Metastable Nature of Iron Carbide.** Bulletin No. 83, Iowa Engineering Experiment Station, Iowa State College, Ames, Iowa. The author is Anson Hayes, professor of physical chemistry and metallography. 52 pages.

**Carbon Dioxide and Imposed Electromotive Force as Factors Affecting Rates of Corrosion of Iron in Return Mains of Steam Heating Systems.** By Anson Hayes, E. Lee Henderson and Charles E. Staneart, department of chemistry, Iowa State College. Published as Bulletin No. 84 of the Iowa Engineering Experiment Station, Ames, Iowa.

**Investigations of Fuels and Fuel Testing in 1925.** By the Testing and Research Laboratories of the Canadian Department of Mines, Ottawa. Publication No. 671. Pages 184.

*Production of Steel Ingots in January Showed an Exceptional Gain, Over 25 Per Cent, and Now Has Gone Above the Line Representing the Calculated Trend of Consumption for the First Time Since Last May*




# Great Increase in Ingot Production

## Daily Rate of 152,304 Tons Was 25.7 Per Cent Above December and the Largest in Eight Months

PRODUCTION of steel ingots in the United States in January is calculated by the American Iron and Steel Institute at 3,959,904 gross tons. This is based on returns from companies which in 1926 produced 95.40 per cent of the total tonnage. With 26 working days, the January production was 152,304 tons a day. This compares with 121,167 tons in December and 119,299 tons in November, and with 144,611 tons a year ago.

Except for March, April and May, the January total tonnage was greater than that recorded in any month last year. With two exceptions (1926 and 1925) it was the largest January output ever made. It exceeded last year's opening month by 5.3 per cent. Most of the gain of 25.7 per cent over December was made in open-hearth steel, which advanced 28.2 per cent. Bessemer tonnage went up 11.3 per cent. Only once before was the present gain of 809,000 tons in one month matched. March, 1918, 26 working days against February's 24, advanced 1,003,000 tons. The famous "heatless days" were then over.

Estimating production in January of electric and crucible steel ingots (no longer covered in the institute's monthly figures) at 700 tons a day, the January total ingot output would appear to be about 153,000 tons a day. Details of the past two years are shown in the table.

**Production of Steel Ingots**

(Gross Tons)

| Months | Reported by Companies Which Made 95.40 Per Cent of the Steel Ingots in 1926 | | Calculated Monthly Production All Companies | Approximate Daily Production All Companies |
|---|---|---|---|---|
| | Open-Hearth | Bessemer | | |
| 1928 | | | | |
| Jan. | 3,278,897 | 498,851 | 3,959,904* | 152,304* |
| 1927 | | | | |
| Jan. | 3,041,233 | 545,690 | 3,759,877* | 144,611* |
| Feb. | 3,042,232 | 565,201 | 3,781,376* | 157,557* |
| March | 3,701,418 | 590,716 | 4,499,092* | 166,633* |
| April | 3,340,852 | 565,634 | 4,094,849* | 157,494* |
| May | 3,272,810 | 557,683 | 4,015,192* | 154,430* |
| June | 2,822,477 | 486,047 | 3,468,055* | 133,387* |
| July | 2,595,692 | 436,446 | 3,178,342* | 127,134* |
| Aug. | 2,805,657 | 505,584 | 3,470,903* | 128,552* |
| Sept. | 2,611,976 | 471,455 | 3,232,108* | 124,312* |
| Oct. | 2,641,920 | 495,798 | 3,289,013* | 126,500* |
| Nov. | 2,477,253 | 481,830 | 3,101,764* | 119,299* |
| Dec. | 2,557,130 | 448,299 | 3,150,345* | 121,167* |
| Total | 34,910,650 | 6,150,383 | 43,040,916* | 138,395* |
| 1926 | | | | |
| Jan. | 3,326,846 | 581,683 | 4,132,210 | 158,931 |
| Feb. | 3,023,829 | 556,031 | 3,785,051 | 157,710 |
| March | 3,590,791 | 635,680 | 4,468,617 | 165,504 |
| April | 3,282,435 | 601,037 | 4,105,799 | 157,915 |
| May | 3,201,230 | 516,676 | 3,927,979 | 151,076 |
| June | 3,036,162 | 498,764 | 3,734,153 | 143,621 |
| July | 2,911,375 | 526,500 | 3,634,993 | 139,807 |
| Aug. | 3,145,055 | 627,273 | 3,986,966 | 153,345 |
| Sept. | 3,089,240 | 612,588 | 3,913,383 | 150,515 |
| Oct. | 3,224,584 | 630,526 | 4,074,544 | 156,713 |
| Nov. | 2,915,558 | 592,239 | 3,705,744 | 142,529 |
| Dec. | 2,788,479 | 493,172 | 3,466,766 | 133,337 |
| Total | 37,535,584 | 6,872,169 | 46,936,205 | 150,920 |

*Excluding crucible and electric steel ingots.

## Foundrymen Appoint Members of Bureau of Standards Committee

Representatives of the American Foundrymen's Association on the ferrous metal committee advisory to the United States Bureau of Standards have been appointed for 1928 and are as follows:

John Howe Hall, metallurgical engineer Taylor-Wharton Iron & Steel Co., High Bridge, N. J., chairman of the A. F. A. group and representing the steel castings section of the A. F. A.

H. Bornstein, chief chemist Deere & Co., Moline, Ill., representing the cast iron section of the A. F. A.

J. B. Deisher, consulting engineer, 24 Roslyn Street, Rochester, N. Y., representing the malleable section of the A. F. A.

The advisory committee to the Bureau of Standards meets once a year and with its staff goes over the activities of the bureau, advising as to the projects which seem to be of greatest need to the industries, and discussing projects which should be given future consideration.

The next meeting of the committee is to take place in Washington May 11 and 12.

## Fewer Locomotives Shipped

Railroad locomotives to the number of 47 were shipped in January, as against 72 in December, according to the Department of Commerce, Washington. Of the December shipments, 22 locomotives were steam and 23 electric for domestic use and two were steam engines for foreign use. Unfilled orders numbered 222 on Jan. 31, against 232 a month earlier. January shipments made the lowest month's total in several years.

# Increasing Blast Furnace Capacity

## Study of Output of Past 37 Years Covers Total Capacity of Furnaces Available, Number of Furnaces and Average Number in Blast and Tonnage Produced

AVERAGE annual production of pig iron per furnace in blast in the United States has advanced from 29,570 tons in 1891 to 176,700 tons in 1927, according to figures published in a Business Barometer of the Iron and Steel Industry, prepared by the School of Business Administration, University of Pittsburgh. Our table is based on one from an unpublished master's thesis by F. C. Smith, of the Department of Business Statistics of that university. With a few irregularities, the advance was continuous over the period. The average output first reached 100,000 tons per furnace in 1909. It has not dropped below that figure since then. It first reached 150,000 tons per furnace in 1921, and dropped below only in 1923, when, with a new high record output of pig iron for the country, many of the smaller, high-cost furnaces were brought into play by the demand for iron.

Figures for capacity were derived from annual reports of the American Iron and Steel Institute. In 1896, and again in 1924, 1926 and 1927, a slight decline in total capacity was registered. But no retrograde movement appears in the average capacity per furnace, which shows a consistent and steady rise from 62.5 tons a day in 1891 to 364.3 tons in 1926. It first passed 100 tons in 1896, then 200 tons in 1907 and 300 tons in 1920. While this change came about in large measure from the erection of large and ever larger stacks, it was accelerated by the gradual disappearance of most of the charcoal furnaces, which are small, individually, and of low output.

*FURNACES in Blast in the United States, as an Average for the Year, for Each Year from 1891 to 1927, Both Inclusive, Together With the Total Number of Furnaces in the Country. Heavy elimination of worn-out and high-cost furnaces features the recent years*

One diagram shows the total number of furnaces available (including those undergoing repair) on Jan. 1 of each year from 1891 to 1927. Furnaces in blast furnish a companion curve which gives a clear indication of the extent to which existing furnaces were being used. The active furnaces represent the average, during the year, of the monthly figures.

In a second diagram the steady upsweep of the average

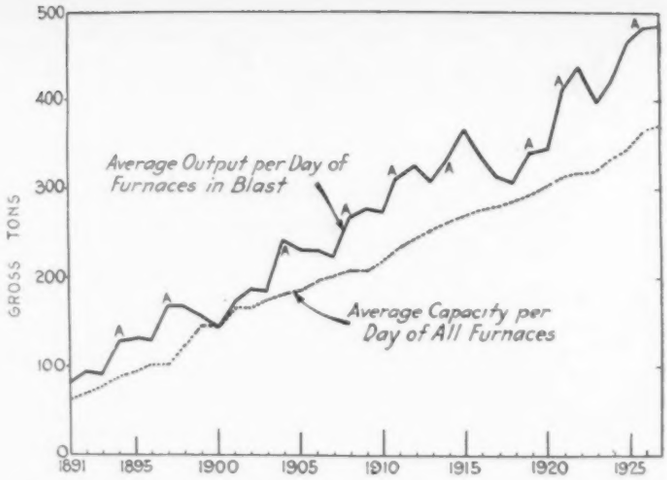
*Number and Capacity of Furnaces Available and of Furnaces in Blast in the United States:* 1891-1927

| Year | Total Capacity (Thousands of Gross Tons) | Number of Furnaces Available Jan. 1 | Average Capacity per Furnace (Gross Tons) | | Annual Production (Thousands of Gross Tons) | Average Number of Furnaces in Blast | Average Production per Furnace in Blast (Gross Tons) | |
|---|---|---|---|---|---|---|---|---|
| | | | Year | Day | | | Year | Day |
| 1891 | 13,064 | 573 | 22,800 | 62.5 | 8,280 | 280 | 29,570 | 81.0 |
| 1892 | 14,551 | 571 | 25,480 | 69.8 | 9,157 | 266 | 34,430 | 94.1 |
| 1893 | 16,188 | 569 | 28,450 | 77.9 | 7,125 | 215 | 33,140 | 90.8 |
| 1894 | 16,271 | 518 | 31,410 | 88.8 | 6,657 | 141 | 47,210 | 129.3 |
| 1895 | 17,512 | 511 | 34,270 | 93.9 | 9,446 | 197 | 47,950 | 131.4 |
| 1896 | 17,374 | 468 | 37,120 | 101.7 | 8,623 | 181 | 47,640 | 130.2 |
| 1897 | 17,446 | 470 | 37,120 | 101.7 | 9,653 | 158 | 61,100 | 167.4 |
| 1898 | 19,086 | 423 | 45,120 | 123.6 | 11,774 | 190 | 61,970 | 169.8 |
| 1899 | 21,991 | 414 | 53,120 | 145.5 | 13,621 | 236 | 57,720 | 158.1 |
| 1900 | 21,991 | 414 | 53,120 | 145.5 | 13,789 | 260 | 53,030 | 145.3 |
| 1901 | 24,812 | 406 | 61,110 | 167.4 | 15,878 | 251 | 63,260 | 173.3 |
| 1902 | 24,812 | 406 | 61,110 | 167.4 | 17,821 | 261 | 68,280 | 187.1 |
| 1903 | 26,216 | 412 | 63,630 | 174.3 | 18,009 | 266 | 67,700 | 185.5 |
| 1904 | 28,114 | 425 | 66,150 | 181.2 | 16,497 | 186 | 88,690 | 242.4 |
| 1905 | 29,154 | 429 | 67,960 | 186.2 | 22,992 | 271 | 84,840 | 232.4 |
| 1906 | 30,446 | 424 | 71,810 | 196.8 | 25,307 | 300 | 84,360 | 231.1 |
| 1907 | 31,581 | 429 | 73,620 | 201.7 | 25,781 | 315 | 81,840 | 224.2 |
| 1908 | 33,646 | 443 | 75,950 | 208.1 | 15,936 | 162 | 98,370 | 268.8 |
| 1909 | 34,834 | 453 | 76,060 | 208.4 | 25,795 | 255 | 101,160 | 277.2 |
| 1910 | 37,552 | 468 | 80,240 | 219.8 | 27,304 | 273 | 100,010 | 274.0 |
| 1911 | 40,128 | 473 | 84,840 | 232.4 | 23,650 | 208 | 113,700 | 311.5 |
| 1912 | 41,475 | 465 | 89,190 | 244.4 | 29,727 | 249 | 119,390 | 326.2 |
| 1913 | 43,257 | 466 | 92,830 | 254.3 | 30,966 | 275 | 112,600 | 308.5 |
| 1914 | 44,395 | 462 | 96,090 | 263.3 | 23,332 | 192 | 121,520 | 332.9 |
| 1915 | 44,405 | 451 | 98,460 | 269.8 | 29,916 | 223 | 134,150 | 367.5 |
| 1916 | 45,034 | 445 | 101,200 | 277.3 | 39,435 | 317 | 124,400 | 339.9 |
| 1917 | 45,865 | 448 | 102,380 | 280.5 | 38,621 | 337 | 114,610 | 314.0 |
| 1918 | 47,948 | 455 | 105,380 | 288.7 | 39,055 | 349 | 111,910 | 306.6 |
| 1919 | 49,270 | 459 | 107,340 | 294.1 | 31,015 | 249 | 124,560 | 341.3 |
| 1920 | 50,222 | 453 | 110,860 | 303.7 | 36,926 | 292 | 126,460 | 345.5 |
| 1921 | 51,741 | 452 | 114,470 | 313.6 | 16,688 | 111 | 150,340 | 411.9 |
| 1922 | 52,488 | 450 | 116,640 | 319.6 | 27,220 | 170 | 160,120 | 439.0 |
| 1923 | 52,687 | 449 | 117,340 | 321.5 | 40,361 | 278 | 145,180 | 397.8 |
| 1924 | 52,684 | 432 | 121,950 | 334.1 | 31,406 | 204 | 153,950 | 420.6 |
| 1925 | 53,435 | 425 | 125,730 | 344.5 | 36,701 | 216 | 169,910 | 465.5 |
| 1926 | 52,521 | 395 | 132,960 | 364.3 | 39,373 | 224 | 175,770 | 481.6 |
| 1927 | 51,681 | 379 | 136,362 | 373.6 | 36,400 | 206 | 176,699 | 484.1 |

capacity of all furnaces stands out prominently. At only one point (1900) does the curve showing average output per day go as low as the average capacity. Mainly it is about 25 per cent higher, due to the more intensive use of the latest, largest and lowest-cost units.

Notable in this diagram is the recurrence of nine "humps" at A, A ——— A, each appearing at a year when total production slumped, and each successive one higher than any of its predecessors. This bears out the observed fact that, when demand falls off, it is the small, high-cost furnace which first is shut down, leaving the large units to carry the load at the lowest possible total cost.

As a matter of fact, the 206 furnaces (average) in blast in 1927 produced one-sixth more iron than the 275 furnaces of 1913; more than twice as much iron as the 266 furnaces of 1903; nearly three times as much as the 236 furnaces of 1899 and four times as much as the 266 furnaces of 1892. The average furnace of 1927 made six times as much iron as the average furnace of 1891.




*Average Capacity per Day of All Furnaces Available Runs Well Below the Average Output of Those in Blast, Because the Furnaces in Most Constant Use Are the Latest, Largest and Most Economical We Have. Humps in the upper curve, at A A A, show years of low total output, in which only the very best of the furnaces could be run. Each such year made a new record in average output per furnace*

## Weirton Steel Co.'s Ingot Capacity Now Exceeds 1,000,000 Tons

The Weirton Steel Co., Wierton, W. Va., informs THE IRON AGE that with the completion of a new open-hearth furnace, which was lighted this week, it will have a total ingot capacity of not less than 1,050,000 tons annually. The new open-hearth furnace will give the Weirton company a total of 11, the latest one having a rated capacity of 250 tons per heat. The company's finishing capacity is estimated at 960,000 tons a year, made up as follows: Tin plate, 255,000 tons; galvanized and black sheets, 85,000 tons; hot and cold rolled strip steel, 260,000 tons; wide strip sheets, full finished, hot rolled blue annealed and single pickled sheets, 360,000 tons. Its pig iron capacity is 540,000 tons. Much of the new steel capacity of the Weirton company has been added since the publication of the 1926 edition of the Iron and Steel Works Directory of the American Iron and Steel Institute, which gave its ingot rating as 570,000 tons, and this was the figure used in a table of steel company capacities published in the Feb. 2 issue of THE IRON AGE.

## New High Record in Electric Power Output

Production of electric power in December, by public utility power plants in the United States, is reported by the Geological Survey at 7184 million kwhr. This is a gain of nearly 5 per cent over the November total of 6864 and about 4 per cent over the October figure of 6929. The December total was the largest ever recorded. On the daily basis, the sendouts for September, October, November and December were successively new high records. Previous to September, the record was held by December, 1926. The last December total stands at more than double the level of the average month in 1921, and nearly double the figures for 1920. Water-power provided about 38 per cent of the December sendout, against 36½ per cent in November and 34½ per cent in October.

Steel boilers ordered in December are reported by the Department of Commerce at 1054, with a total of 905,680 sq. ft. of heating surface. This is the smallest rating for any month of the year and shows a drop of approximately 20 per cent from the November total of 1,125,261 sq. ft. For the 12 months of 1927 there were 15,946 boilers ordered, aggregating 15,732,639 sq. ft.

## Fewer Steel Barrels Made in December but Year Shows Small Gain

December production of steel barrels reported by 27 companies to the Department of Commerce amounted to 444,227 units. This was the smallest total for any month in more than two years. It compared with 500,909 in the preceding month and with 539,805 in December of last year. Total for the year amounted to 6,630,569 barrels, compared with 6,588,535 barrels in 1926. This represents a gain for the year of less than 1 per cent.

Shipments, at 454,638 units in December, made the smallest total for any month in more than two years. Shipments month by month have held close to the production figures. Stocks at the end of December were 52,606 units. This was a reduction of more than 10,000 during the month, but is not far from the average figure of the past 18 months. Unfilled orders at the end of the year called for 1,308,365 barrels, of which 221,897 were for delivery within 30 days. This makes the largest total of unfilled orders since the end of July.

Shipments of members of the Steel Barrel Manufacturers' Association in December are reported at 277,542. The number of barrels on unfilled orders at the end of the month was 289,392. Capacity was engaged during the month to the extent of 38 per cent.

## Steel Corporation Pension Fund Paid $3,003,209 in 1927

The seventeenth annual report of United States Steel and Carnegie Pension Fund shows that last year $3,003,209.02 was distributed as pensions among retired employees of the United States Steel Corporation and its subsidiary companies. The Carnegie Steel Co. was first among the subsidiaries in the amount paid to retired employees, the amount being $783,896.90. Some of the pension disbursements of subsidiary companies were: American Steel & Wire Co., $610,068.94; American Sheet & Tin Plate Co., $401,675.22; National Tube Co., $283,019.10; H. C. Frick Coke Co., $241,216.24; Illinois Steel Co., $158,052,47; American Bridge Co., $134,753.15; Oliver Iron Mining Co., $113,330.25; Elgin, Joliet & Eastern Railway Co., $41,100.10; Tennesse Coal, Iron & Railroad Co., $40,780.05; Bessemer & Lake Erie Railroad Co., $37,656.10, and Duluth & Iron Range Railroad Co., $35,073.30. There were 1175 employees added to the pension roll during 1927 and 524 were removed from the list. At the close of the year there were 6388 on the pension roll.

# Continental Steel Prices Higher

## General Advances Accompany Swedish Strike—British Ore and Coke Dearer and Steel Demand Better

(*By Cable*)

LONDON, ENGLAND, Feb. 6.

CLEVELAND pig iron is active with consumers placing prompt and forward contracts and inquiring for third quarter. Export demand is still light but inquiries are increasing. Hematite iron is firmer as stocks are diminishing and export sales are increasing. Foreign ore prices are firmer as a result of the strike in the Swedish ore mines, but buyers are not desirous of committing themselves.

Finished iron and steel demand is improving, but plate orders of a substantial nature are still scarce. In general the trade is showing definite signs of improvement.

Tin plate is quiet, but there is a moderate volume of inquiry. Galvanized sheets are inactive, but the outlook is hopeful. Japan has been a moderate purchaser of light-gage black sheets.

Continental iron and steel prices are strong on increased costs and a good demand from overseas markets. Most French works and some Belgian producers have withdrawn quotations. Continental pig iron is firmer, but practically no sales have been effected with British users.

The total French production last year was 9,300,000 metric tons of pig iron and 8,275,000 tons of steel ingots. There were 142 blast furnaces operating on Jan. 1. German output last year was 13,100,000 metric tons of pig iron and 16,305,000 tons of steel ingots. Rolled steel output was 12,840,000 tons.

## Luxemburg Market Quiet but Prices Are Unchanged

LUXEMBURG, Jan. 24.—The early part of January was quiet and prices were slightly irregular, but, with the inventory period over, the price situation is improved. Competition for business in South America and the Far East continues keen, but in China the political situation still hampers buying. Rail mills are well filled, some sizable tonnages having been booked in December. Buying by American consumers is small, but a revival of demand from that market is expected as the year progresses.

The entente of French, Belgian and Luxemburg producers of phosphoric foundry iron is maintaining domestic and export prices without change. It is pointed out by the association that prices of pig iron in Switzerland and Italy have reached such a low level that further reduction is impossible, but in other export markets prices will continue to fluctuate.

Semi-finished material is inactive and purchasers are seeking concessions. Beams are unchanged at £4 7s. to £4 9s. per ton (0.96c. to 0.98c. per lb.) and bars are fairly firm at £4 17s. to £4 18s. per ton (1.07c. to 1.08c. per lb.). The wire rod market is active, but prices are unchanged. Sheet purchasing has been small and concessions are beginning to develop on the lighter gages.

With 37 out of 47 furnaces in blast at the end of December, total pig iron output for the month was 228,139 metric tons. Steel ingot production reached 213,864 metric tons.

## Higher Ocean Freights from Europe Aid United States

HAMBURG, GERMANY, Jan. 26.—Continental mills are viewing with dissatisfaction a further increase of ocean freight rates to Brazil, Uruguay and Argentina. Effective Feb. 1, the freight rates have been increased by 2s. 6d. to 4s. (61c. to 98c.) per ton on pipes, tubes and fittings, structural shapes, bars, plates, sheets, wire, nails, bolts and rivets, parts of railroad cars and locomotives.

These increases in freight rates are on shipments from Hamburg, Bremen, Rotterdam and Antwerp, so that German and Belgian mills are being forced to make a corresponding advance in their c.i.f. quotations. The new rate is effective until the end of March, when a further advance is in prospect. Producers point out that the rates will mean a loss of business to them and will probably react to the advantage of their American

### British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.87 per £ as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Durham coke, del'd. | £0 | 17¾s. | | | | $4.33 | | |
| Bilbao Rubio ore* | 1 | 1 | to £1 | 1½s. | | 5.11 | to | $5.24 |
| Cleveland No. 1 fdy. | 3 | 7½ | | | | 16.44 | | |
| Cleveland No. 3 fdy. | 3 | 5 | | | | 15.83 | | |
| Cleveland No. 4 fdy. | 3 | 4 | | | | 15.59 | | |
| Cleveland No. 4 forge | 3 | 3½ | | | | 15.46 | | |
| Cleveland basic (nom.) | 3 | 15 | to | 3 | 15½ | 18.27 | to | 18.39 |
| East Coast mixed | 3 | 9 | to | 3 | 10 | 16.80 | to | 17.05 |
| East Coast hematite | 3 | 9½ | to | 3 | 10½ | 16.93 | to | 17.17 |
| Rails, 60 lb. and up | 7 | 15 | to | 8 | 0 | 37.75 | to | 38.96 |
| Billets | 6 | 0 | to | 6 | 10 | 29.22 | to | 31.66 |
| Ferromanganese | 13 | 10 | | | | 65.75 | | |
| Ferromanganese (export) | 13 | 0 | to | 13 | 5 | 63.31 | to | 64.53 |
| Sheet and tin plate bars, Welsh | 5 | 7½ | to | 5 | 15 | 26.18 | to | 28.01 |
| Tin plate, base box | 0 | 18 | to | 0 | 18¼ | 4.39 | to | 4.45 |
| Black sheets, Japanese specifications | 13 | 5 | to | 13 | 10 | 64.53 | to | 65.75 |
| | | | | | | C. per Lb. | | |
| Ship plates | 7 | 12½ | to | 8 | 2½ | 1.66 | to | 1.77 |
| Boiler plates | 10 | 10 | to | 11 | 0 | 2.28 | to | 2.39 |
| Tees | 8 | 2½ | to | 8 | 12½ | 1.77 | to | 1.99 |
| Channels | 7 | 7½ | to | 7 | 17½ | 1.60 | to | 1.71 |
| Beams | 7 | 2½ | to | 7 | 12½ | 1.55 | to | 1.66 |
| Round bars, ¾ to 3 in. | 7 | 5 | to | 7 | 15 | 1.58 | to | 1.69 |
| Steel hoops | 10 | 10 | to | 11 | 0 | 2.28 | to | 2.39 |
| Black sheets, 24 gage | 9 | 15 | to | 10 | 0 | 2.12 | to | 2.17 |
| Galv. sheets, 24 gage | 13 | 0 | to | 13 | 5 | 2.82 | to | 2.88 |
| Cold rolled steel strip, 20 gage, nom. | 14 | 0 | to | 14 | 5 | 3.04 | to | 3.10 |

*Ex-ship, Tees, nominal.

### Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Foundry pig iron: (a) | | | | | | | | |
| Belgium | £3 | 2½s. | | | | $15.22 | | |
| France | 3 | 2½ | | | | 15.22 | | |
| Luxemburg | 3 | 2½ | | | | 15.22 | | |
| Basic pig iron (nom.): | | | | | | | | |
| Belgium | 3 | 0 | | | | 14.61 | | |
| France | 3 | 0 | | | | 14.61 | | |
| Luxemburg | 3 | 0 | | | | 14.61 | | |
| Coke | 0 | 18 | | | | 4.39 | | |
| Billets: | | | | | | | | |
| Belgium | 4 | 12 | | | | 22.41 | | |
| France | 4 | 12 | | | | 22.41 | | |
| Merchant bars: | | | | | | C. per Lb. | | |
| Belgium | 5 | 2 | to £5 | | 4s. | 1.13 | to | 1.15 |
| France | 5 | 2 | to | 5 | 4 | 1.13 | to | 1.15 |
| Luxemburg | 5 | 2 | to | 5 | 4 | 1.13 | to | 1.15 |
| Joists (beams): | | | | | | | | |
| Belgium | 4 | 11 | | | | 1.00 | | |
| France | 4 | 11 | | | | 1.00 | | |
| Luxemburg | 4 | 11 | | | | 1.00 | | |
| Angles: | | | | | | | | |
| Belgium | 5 | 2 | | | | 1.13 | | |
| ⅛-in. plates: | | | | | | | | |
| Belgium (a) | 6 | 6 | | | | 1.39 | | |
| Germany (a) | 6 | 6 | | | | 1.39 | | |
| ⅞-in. ship plates: | | | | | | | | |
| Belgium | 6 | 1 | | | | 1.34 | | |
| Luxemburg | 6 | 1 | | | | 1.34 | | |
| Sheets, heavy: | | | | | | | | |
| Belgium | 6 | 1 | | | | 1.34 | | |
| Germany | 6 | 1 | | | | 1.34 | | |

(a) Nominal.

competitors, especially in tubular products, sheets, barbed wire and railroad cars. In other products price differences are sufficiently great to prevent American sellers approaching the European quotations.

## FAR EAST BUYS TIN PLATE

### Business Confined to Small Merchant Buying—Wire Rod Orders Go to Canadian Mill

NEW YORK, Feb. 7.—Business with Far Eastern markets has been small in recent weeks. Chinese merchants are offering to purchase second hand material and plate cuttings for $24 to $26 per ton, c.i.f. Shanghai, but such prices are too low to interest American sellers. Inquiries for tin plate are confined to small lots of 500 base boxes or less. Occasional sales of tin plate waste are being made to both Chinese and Japanese merchants. With Japan entering into a political campaign, at which a larger proportion of the population will vote than ever before, not much business activity is expected until after the election in March.

Recently there were some inquiries from Japan for high-carbon wire rods, but most of this business is understood to have gone to a Canadian mill at $43.50 per ton, c.i.f. Japan, although the Canadian quotation today is about $45. Tin plate quotations are substantially unchanged at about $5.20 per base box, c.i.f. Japanese or Chinese port. There are no inquiries of consequence for light-gage black sheets, the price of which for export continues at about $77 per ton, c.i.f. Japan.

New York importers of European steel report higher Continental quotations, particularly from German mills. Current quotations range from 1.70c. to 1.75c. per lb., delivered Atlantic port, on ordinary Thomas steel bars, with shapes at about 1.60c. to 1.65c. per lb., delivered. On French and Belgian material these prices can be shaded occasionally by a few cents per 100 lb.

A decision is reported to have been rendered by the Customs Court on the classification of imports of reinforcing bars. A suit brought by Henry L. Exstein & Co., New York, importers, has been in progress for several months, the importers claiming that reinforcing bars should be classified as construction material, which takes a duty of 20c. per 100 lb., instead of the plain steel bar duty of 30c. per 100 lb.

## German Furnaces Affected by Swedish Mine Strike

HAMBURG, GERMANY, Jan. 26.—Industry is beginning to feel the effect of the strike in the Swedish iron mines. Shipments of Swedish ore having ceased, German consumers have turned to the use of North African and Spanish iron ores, which, however, are of different quality. Stocks of iron ore on hand are small, and prices have already registered a slight advance.

German steel mills and blast furnaces are showing interest in iron ore and coal deposits at Kaissarie, Turkey, now being developed. Turkish Government plans to establish a blast furnace and steel mill at Kaissarie have brought out offers from German companies to construct and operate the plant. The Turkish Minister of the Interior, however, has not yet announced whether the plant will be built.

## Agricultural Implement Exports Made New Record in 1927

Exports of agricultural implements from the United States established a record in 1927 amounting to $90,097,949, or $4,500,000 in excess of the previous record, made in 1926, according to George Bell, chief of the agricultural implements division, Department of Commerce, Washington. Field tractors to the number of 56,563 with a value of $33,891,332 represented the largest item. The increase in this item accounted for the gain in value of 1927 shipments over those of 1926, inasmuch as there was a decrease in most lines last year when compared with the preceding year. December exports totaled $6,246,092 as against $4,954,359 a year earlier. The principal increase was in tractor shipments, with gains made also in shipments of planters, sprayers, dusters, threshers, and windmills and parts.

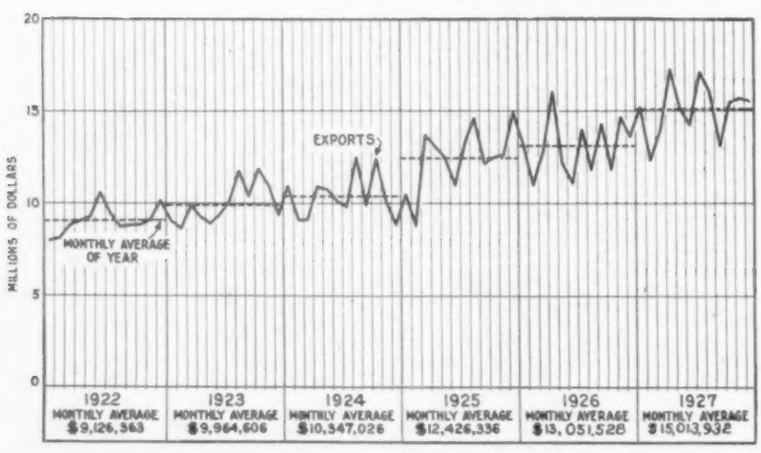
## Accidents in Small Plants

More than two-thirds of the number of industrial establishments in the United States employ not more than 20 wage earners each. The total number of wage earners in such plants was given in an address by Ethelbert Stewart, commissioner of labor statistics, at 824,000. He made the significant statement that in these small establishments accidents are on the increase. Because of this fact, some insurance companies refuse to provide accident insurance in such plants, while the units are too widely scattered and too unorganized to form mutual insurance organizations.

While an enormous sum is being spent annually on safety work, it goes almost wholly into large plants. The small units lack the safety equipment which large corporations provide almost automatically. Safety organization practically does not exist in them, while the tendency to push production to the highest possible point is largely responsible for the trouble which occurs.

In a table detailing the results of a study along this line, and which is published in extenso in the January issue of *Monthly Labor Review*, the loss ratio for the smallest plants is shown to be almost double that for the largest plants. While the change in the loss ratio, as the plants become larger and larger, is not uniformly downward, it has that general tendency, and a curve would be almost uniform in its downward grade. The ratio for the smallest plants is more than 50 per cent higher than that for the average of all plants.

## *Exports of Industrial Machinery*




*EACH of the past five years has shown a consistent increase over the preceding years in United States exports of industrial machinery. The diagram shows the month-by-month movement and, in horizontal dotted lines, the average movement for each year beginning with 1922. The monthly average for 1927 was 65 per cent higher than that for 1922 and was more than 15 per cent above that of 1926. Shipments in 1927 aggregated more than $180,000,000. This steady increase was not participated in by all lines of machinery, but those which showed declines were more than offset by those which showed advances.*

# British Empire Steel Corporation Acquired by Bankers

## Canadian Company Probably Will Be Reorganized, Though No Definite Announcement Has Been Made—President Roy M. Wolvin Resigns

TORONTO, ONT., Feb. 7.—Following a meeting of the British Empire Steel Corporation and subsidiary companies in Montreal, Que., official announcement was made of the acquisition of control of the British Empire Steel Corporation by Holt, Gundy & Co., prominent in Canadian banking. President Roy M. Wolvin announced his resignation and was succeeded as head of the corporation by C. B. McNaught of Toronto. Sir Herbert S. Holt, J. H. Gundy, George H. Montgomery, G. H. Duggan and W. E. Wilder became members of the board of directors. The new controlling interests have nothing to say as yet regarding their plans for reorganization. In fact, indications are that it will be some time before such a plan is finally drafted. The official statement was as follows:

At the meeting of board of directors of the British Empire Steel Corporation, Ltd., Dominion Steel Corporation, Ltd., Nova Scotia Steel & Coal Co., Ltd., and their subsidiary companies, President Wolvin resigned, having succeeded in bringing into the affairs of the steel and coal industry of the Maritime Provinces new and influential financial and industrial interests. Mr. Wolvin expressed a belief that the complete severance of his connection with the affairs of these corporations might assist in ending litigation and facilitating reorganization of the finances and property of the company. He further stated that his entire holdings of securities of Dominion Steel Corporation, Ltd., and its subsidiaries had been purchased by interests associated with Holt, Gundy & Co., who had also secured 94 per cent of the currency series of consolidated mortgage bonds of Dominion Iron & Steel Co., Ltd., the guarantee of these bonds being practically the only indebtedness of Dominion Steel Corporation, Ltd. C. B. McNaught was elected president of British Empire Steel Corporation, Nova Scotia Steel & Coal Co., Ltd., and their subsidiary companies, and Sir Herbert Holt, J. H. Gundy, G. H. Duggan, W. E. Wilder and G. H. Montgomery, K. C., were added to the board of directors of the companies. To insure stability and continuity of management for Dominion Steel Corporation, Ltd., and its chief operating subsidiaries, British Empire Steel Corporation has created a voting trust for five years, the present five voting trustees being: Sir Herbert Holt, J. H. Gundy, G. H. Montgomery, K. C., C. B. McNaught and G. H. Duggan.

The British Empire Steel Corporation has two main interests, steel and coal. These are handled through an organization of 13 companies. The corporation consists in the first place of three chief companies, the Dominion Steel Corporation, the Nova Scotia Steel & Coal Co., and the Halifax Shipyards. The first two of these groups have, in turn, separate groups of lesser subsidiary companies. The Dominion Steel Corporation, for example, has 11 subsidiaries, including the Dominion Iron & Steel Co.; the Dominion Coal Co., with 16 collieries in Cape Breton, and the Sydney and Louisbourg Railway Co.; the Nova Scotia Steel & Coal Co., operating four collieries at Sydney, iron mines at Wabana, Newfoundland, limestone and dolomite properties in Cape Breton and blast furnaces and steel works at Sydney Mines; the Acadia Coal Co., Ltd., with four collieries in Pictou County, N. S.; the Halifax Shipyards, owning and operating a drydock and extensive shipbuilding and repair plants at Halifax; the Dominion Shipping Co., Ltd., with 12 cargo carrying vessels of a total tonnage of 68,000 tons; Wasis Steamship Co., Ltd., with two steel carrying ships; Cumberland Railway & Coal Co., with three collieries in Nova Scotia; Eastern Car Co., manufacturers of standard railroad cars and other rolling stock at Trenton, N. S.; the Sydney Lumber Co., at Dalhousie, and James Pender & Co., Ltd., manufacturers of wire nails and fencing.

---

## COMMENDS BUSINESS PAPERS

### J. C. McQuiston of Westinghouse Electric & Mfg. Co. Addresses Publishers at Advertising Club

FOR comprehensive knowledge of our industries, manufacturers owe a great deal to the technical publishing companies, said J. C. McQuiston, advertising manager Westinghouse Electric & Mfg. Co., East Pittsburgh, in an address to a group of business publishers at the Advertising Club, New York, on Jan. 31. His subject was "The Place of the Business Paper in the General Advertising Program."

Progressive and highly specialized publishing organizations have made exhaustive surveys of the many industries of the United States, he said, and have pointed the way for the manufacturer to talk to the specialists in all these fields.

"Stop to think how Mr. Westinghouse discovered the air brake! It was after reading something in a little publication," said Mr. McQuiston. "He picked it up one day on a train—bought it from a little girl that he thought really needed the 15c. or a quarter that she asked for it. He bought it out of kindness. He looked through it and read about using air in the switch cylinder, and the idea came to him: 'That's it, the application of air to the braking of trains.'

"Now, that is what our technical publications do. We don't know how much they do for business in spreading these new ideas of inventions and applications and all that. If a man invented something and kept it to himself it would mean nothing. But as it gets into print and goes out to other engineers who think along the same general lines, the idea is enlarged and developed, and out of it all come the big things we have today such as the automobile and the airplane.

"Along with that we have got to give credit to the business publishers for finding the way for the advertiser to use these publications. The publishers know those who subscribe, they know the character of the people who read their publications, and when they come to know the thing that the advertiser has to sell, when they come to know the problems of the advertiser, they can advise him on how to use properly the specialized media they publish.

"They now go further than that. I know because I am one of the beneficiaries of the advice of the leading technical publishers, and I want to emphasize leading technical publishers because in the technical and business publishing field, like in almost every other field of publishing, there are unfortunately a lot of very questionable publications and they weigh the thing down; papers that have no right, after all, to carry advertising. The leading and worthwhile technical publications render a real service. They study the markets, and they bring to the advertiser the service that they render—advice, counsel, plans and guidance which make the advertising effectual.

"As our plan has developed it has been largely through the research work of the leading technical papers. The research work done two years ago crystallized the plan that we have today."

---

## Navy Asks for Bids on Plates

WASHINGTON, Feb. 7.—Bids will be opened on Feb. 14 by the Bureau of Supplies and Accounts, Navy Department, for 505 tons of medium steel plates for modernization of the battleship Oklahoma and for 250 tons of special treatment plates for construction of light cruisers Nos. 24, 28 and 29. The material for the Oklahoma is to be delivered at the Philadelphia navy yard, while the steel for the light cruisers is to be delivered at the Brooklyn yard.

# CONTENTS

February 9, 1928


Heat Treating 3000 Automobile Bumpers Daily.....391

Wright "Whirlwind" a High Achievement in Engineering..395

Operating Costs of Industrial Trucks .....398

Modernizing Forging Practice.....401

Rails Made from Bottom-Cast Ingots .....405

Increasing Blast Furnace Capacity .....415

January Pig Iron Output Up Sharply .....426

Bridge Wire Tested After 75 Years.... 400
Cobalt Steels for Permanent Magnets.. 406
Electrical Industrial Trucks and Tractors in Industry ..... 413
Foundry Members of Bureau of Standards Committee ..... 414
Steel Construction ..... 413
Ventilation of the Holland Tunnel..... 413
New Books Received..... 413
Weirton Steel Co. Ingot Capacity Now Exceeds 1,000,000 Tons ..... 416
Steel Corporation Pension Fund..... 416
Accidents in Small Plants..... 418
Exports of Industrial Machinery..... 418
British Empire Steel Corporation Acquired by Bankers..... 419
Advertiser Commends Business Papers. 419
Cruisers in Naval Program.....424, 425
Sheet and Strip Steel Association..... 425
Steel Company Profits Lower in 1927... 435
Wyckoff Drawn Steel Co. Acquires Chicago Plant ..... 439
Saves by Use of Air Mail..... 439
Bethlehem Employees Offered Stock.... 439

STATISTICAL

Great Increase in Ingot Production.... 414
Fewer Locomotives Shipped ..... 414
High Record in Electric Power Output.. 416
Fewer Steel Barrels Made in December 416
Agricultural Implement Exports Made New Record in 1927..... 418

MEETINGS

National Foreign Trade Council..... 404
Eastern States Blast Furnace and Coke Oven Association ..... 427

NEW EQUIPMENT

Die-Casting Equipment with Automatic Features ..... 407
Automatic Machine for Accurate Spacing and Drilling..... 408
Vertical Miller and Die Sinker..... 408
High-Speed Radial Drills..... 409
Tilting-Arbor Saw Bench..... 409
Immersion Heater for Plating Solutions 410
Rivet Set with Tapered Shank..... 410
Six-Foot Extension to Plate Rolls..... 410

DEPARTMENTS

Book Reviews ..... 411
European Steel Markets..... 417
Editorial ..... 422
Correspondence ..... 424
Iron and Steel Markets..... 428
Comparison of Prices..... 429
Prices, Raw and Finished Products..431-433
Railroad Equipment Buying..... 444
Structural Awards and Projects..... 444
Non-Ferrous Metals ..... 445
Obituary ..... 446
Reinforcing Steel Business..... 446
Personals ..... 447
Machinery Markets ..... 449

# This Issue in Brief

**When does it pay to replace hand trucks** with power trucks? Formulas have been worked out, enabling the user to calculate accurately whether he should use hand, gasoline or electric trucks.—Page 399.

---

**Three-quarters of a century's service fails to weaken bridge wire.** Strands from bridge erected in 1848 show remarkable resistance to corrosion, testing 94,166 lb. per sq. in., and evidencing the durability of old wrought iron.—Page 400.

---

**Heavy gain in steel ingot output.** January's daily average was 152,304 gross tons, which was 25.7 per cent above the 121,167 tons per day made in December.—Page 414.

---

**Favors Krupp methods of rail making.** Bottom-cast ingots produce superior rails, engineer believes. He also recommends the Krupp method of straightening rails through rollers rather than using the American gag press method.—Page 405.

---

**New die-casting machine** requires only one operator. Machine is almost fully automatic. All the operator does is to manipulate the driving clutch lever, supply new metal, and clean the die with an air hose.—Page 407.

---

**Should we build a fearsome navy** to secure a steady flow of essential imports in emergency, or build up a reserve of the necessary materials? As far as the strategic raw materials used in steel-making are concerned, storing reserves would be the wiser policy. Executing the contemplated cruiser-building program would very likely result in competitive building by other nations.—Page 423.

**Low operating costs** secured in new forging plant by straight-line production layout. All hammers in the Willys-Overland forge shop have their own individual furnaces. Work progresses from one operation to another with the least amount of "float" trucking.—Page 401.

---

**Scrap market now reacts differently** to a price advance than it did in former years. Consumers are convinced that they can secure a large supply on any occasion simply by bidding a slight advance. But in the days when the steel industry had sharp peaks and deep troughs a slight rise in scrap prices tightened the supply.—Page 423.

---

Prevents **distortion by quenching pressed parts** in dies. Automobile bumper parts are placed in a hydraulic press as soon as they leave the hardening furnace, and after the dies are closed, the platens are lowered into a vat of oil.—Page 393.

---

**Lower steel prices have not resulted in lower wages** for steel mill workers. Wages appear to be stabilized, even though economies made possible by improved equipment have not kept pace with price reductions.—Page 422.

---

**Swing grinders yield higher production** when used in conjunction with oscillating table to hold work. The table is power driven and moves backward and forward at right angles to the axis of the grinding wheel. At the end of each travel the table is raised slightly so grinding wheel will not retrace its path.—Page 393.

**"Whirlwind" airplane engine is remarkable for accessibility** of its parts and the convenience with which changes can be made. It may be dismantled and inspected or overhauled without being taken out of its airplane mounting. Direct operating cost is less than 4c. per mile.—Page 394.

---

**Number of blast furnaces has decreased** 34 per cent in past 37 years, but capacity has quadrupled. In 1891 there were 573 furnaces available, with a capacity of 13 million gross tons. Today there are 379 furnaces, with a capacity of more than 51 million tons.—Page 415.

---

**Hardening furnace temperature is controlled within 10 deg.** Fahr. by means of overhead combustion chamber. The work chamber is separated from the combustion chamber by a perforated arch, which acts as an accumulator and distributer for the heating gases.—Page 392.

---

**Accident rate is increasing in small plants,** says commissioner of labor statistics. Small establishments, employing not more than 20 wage earners, have a loss ratio almost twice that of the large plants, and the ratio is getting larger, as practically no accident prevention work is done in small plants.—Page 418.

---

**American steel exporters may profit** by increase in ocean freight rates from continental ports to Brazil, Uruguay and Argentina. Rates were advanced from 61 to 98c. per ton on Feb. 1.—Page 417.

---

**Structural steel fabricators will find** useful data in new handbook. New beam and girder sections are included in engineering volume issued by the American Institute of Steel Construction.—Page 417.

ESTABLISHED 1855

# THE IRON AGE

A. I. FINDLEY, *Editor* W. W. MACON, *Managing Editor*

Member of the Audit Bureau of Circulations and of Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York
C. S. BAUR, *General Advertising Manager*

F. J. Frank, *President* George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. A. C. Pearson, *Chairman*. F. J. Frank, *Pres.* C. A. Musselman, *Vice-Pres.* Fred C. Stevens, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: 1362 Hanna Building. Detroit: 7338 Woodward Ave. Cincinnati: 408 Union Central Building. Buffalo: 835 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St.

Subscription Price: United States and Possessions, Mexico, Cuba, $6.00; Canada, $8.50; Foreign, $12.00 per year. Single Copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

PRINTED IN U. S. A.

## Steel Selling Prices and Wages

A SIDELIGHT on the present determination of steel manufacturers to obtain more profitable prices for their products was contained in the annual report of the Bethlehem Steel Corporation and apparently has escaped the attention it deserves.

Since Jan. 1, 1923, President Grace reported, the corporation has expended $150,000,000 for additions and improvements to properties and this program has been "largely responsible for a reduction of $7.27 per ton in the average cost of producing the finished steel products shipped by the corporation in 1927 as compared with the corresponding average (based upon equivalent tonnages of the same products) in 1923."

This is a cost reduction that would be gratifying to any manufacturer, but here is the rub:

"Unfortunately," continued Mr. Grace, "the economies in production have not resulted in a corresponding increase in the net income of the corporation because, during the same period, the prices of steel products have steadily declined, the average billing price per ton of all rolled steel and other finished products shipped by the corporation during 1927 having been $8.60 less than the corresponding average for 1923. The effect upon earnings of this decline in prices is apparent from the fact that Bethlehem shipped 3,971,811 tons of finished products during 1927."

It is significant that during the past four years when prices of finished steel products have steadily declined, wages not only of iron and steel workers but of all wage earners have varied but little. The National Industrial Conference Board in a recent review of wages, hours and employment in manufacturing industries points out that "for four years average hourly earnings of all wage earners covered by the Conference Board's study have varied only between 56 and 57 cents, and such uniformity must be accepted as convincing evidence of the stability of present wage scales."

Reports of wage reductions in certain industries have appeared in the press within recent months, but it can be stated on the highest authority that there is no intention on the part of the steel industry to make up for the declines in prices of its commodities by any reduction of wage scales among iron and steel workers. On the contrary, the belief that such prosperity as we now have is based largely on a high average level of wage earnings is well accepted. With labor costs undisturbed and with other operating costs brought as low as at present seems feasible, the steel industry now turns to the consumer. Price advances have been announced in almost all branches of the industry since Jan. 1, yet the protection given at former prices is so widespread that not much, if any, gain in the average shipping prices will be realized in this quarter, and the effect of the advances on second quarter business and billing prices is still to be determined. Buyers have generally accepted as an economic law that an advance in prices cannot be maintained except when supported by a demand which taxes capacity, but the profitless selling of the past year or more undoubtedly has created a new state of mind among steel selling organizations which may bring a better adherence to prices that will pay dividends.

## Recent Scrap Market Phases

OF all sections of the iron and steel trade the scrap market is always one of the most interesting, because it is a market of open trading, subject to changes in the actual practices of buyers and sellers and to changes in mental attitudes. There is always the alluring chance of "beating the game," and there are more participants than there used to be. Time was when the well posted dealer could safely pursue the course of accumulating scrap in yard over periods of months, liquidating over other periods, with a large enough margin in market fluctuations to cover the extra freight, the cost of carriage, and a comfortable profit. Of late this has been impossible, for originators of scrap have endeavored to play the market by holding back scrap when prices are low and consumers have played corresponding tactics by accumulating cheap scrap

and endeavoring to get through a spell of maximum consumption with a minimum of stock.

Still more recently another turn has come, as mills have adopted a policy of carrying smaller stocks, in any condition, than formerly. They have found sales competition so keen as to relieve them of their former danger, that of dealers creating further rises when they found one advance had occurred. Mills are convinced that on any occasion they can promptly get a larger supply by bidding a slight advance. Such an advance loosens the supply instead of tightening it as in the old days.

Yet some speculative tendency remains, as is indicated by the fact that both in January of this year and January of last year the scrap market weakened, whereas in each case mill operations were expanding and scrap consumption increased. Plainly the preceding rises in the market had been in anticipation, the weakening showing that the situation had been overplayed.

Dealers' yard stocks are now made up almost wholly of scrap that must pass through yard, for assorting or for manufacture. With this scrap there is naturally some speculation. The flow into yard is fairly uniform, while in determining the time to sell the dealer has opportunity to use his judgment.

A special influence helping to lessen the swings in scrap prices in recent years is that the steel industry is not called upon at times to operate at capacity or to swell its output beyond ordinary ability to produce. There used to be such occasions, and then the mills used larger percentages of scrap, relative to pig iron, than their averages. Now their practice varies but little, for they have been having neither sharp peaks nor deep troughs.

## Adequate vs. Competitive Navy Building

COMMENTS both favorable and unfavorable have come to us on editorials appearing in THE IRON AGE since the abortive Geneva Conference to limit auxiliary naval craft. These editorials have opposed competitive and hence excessive navy building.

Some of the adverse criticism points out that the facts and data presented give but a partial picture of the situation. Space limitations, however, demand that the editor select those facts which bear upon the point he is making. A consideration of all the phases of the matter, while properly a preliminary to the writing, cannot be compressed within a few hundred words.

Nor is it exactly in the field of THE IRON AGE to discuss the relative parity of Great Britain's *York*, Japan's *Aoba*, and our own *Omaha* as cruisers; that is for the naval experts. Parity also is a word which means different things to different experts. But the broad question of expansion of naval armament and its repercussions on the international situation is within the field of a journal serving the steel and machinery industries —the industries essential to the maintenance of our country's defenses.

We agree with President Coolidge's words spoken last Memorial Day: "Our forces are dedicated solely to the preservation of peace."

Again: We subscribe to President Coolidge's sentiments expressed at Trenton, Dec. 29, 1926, "I do not believe that we can advance the policy of peace by returning to the policy of competitive armaments."

We believe that if the United States lays down twenty-five 10,000-ton cruisers in five years, there will be as a result much competitive building by other powers, and consequently are opposed to H. R. 7359, "A bill to provide for the increase of the naval establishment," in its present form.

We believe that the energy required to build arms and armaments on the scale contemplated by some proposals could more profitably be used for articles of peaceful commerce, more profitable both in dollars and in spiritual values.

We heartily indorse a steady and deliberate replacement program for keeping our present navy at the top of efficiency.

There is no reason for speedy building in any category of ships, because (with President Coolidge) we can see no threatening international situation, and (again agreeing with the commander-in-chief of the Navy) our present fleet is among the greatest afloat.

As to the argument often advanced that we need a fearsome navy to assure a continuous flow of essential imports, especially for the iron and steel industry, we hold that it would be wiser and better business (as far as the steel industry is concerned) to import and store a generous reserve of the strategic raw materials, manganese, chromium, tungsten, vanadium, nickel and tin, than to foment international misunderstanding, and to imperil the peace of the world, by excessive building of naval armament.

## Per Ton Profits in Steel

A STUDY of the United States Steel Corporation's monthly earnings over a period of years relative to the tonnage of current shipments does not disclose, as might be fancied, a tendency of profits per ton to decrease with light operations and increase with heavy operations. The much used argument that the Steel Corporation has "other sources" of earnings is not adequate, for these outside earnings are small relative to the total.

One is prompted to question the sufficiency of the common doctrine that high operation makes for reduction in unit cost, particularly when carried to the length of claiming so large a reduction as to justify seeking a higher operating rate at the expense of prices. That there have been such practices is generally charged.

Depreciation allowances make the subject an intricate one. Does depreciation increase or decrease according to the rate at which a plant operates? If the depreciation is a fixed amount for a given time, then the per ton charge increases as output diminishes, and per ton profits decrease. Depreciation and obsolescence may be considered together, and there is an important point not always considered, that these decreases in the value of a given property are not controlled entirely by what goes on within the property. They are affected also by what occurs outside. If competitors adopt improved methods and appliances the value of the plant which does not do so is diminished.

From such considerations this becomes obvious, that a partial idleness of a plant due to trade conditions causing light general demand does not produce obsolescence as does similar idleness occasioned

by owners who are not progressive or sufficiently assiduous in selling their products. A light operation shared by the whole producing trade results in less depreciation and obsolescence than occurs when trade is active. The measure is in large part what occurs in the trade as a whole, rather than what occurs in the individual plant, as to its own operating rate. The impropriety of any general policy of seeking a high operation of a steel plant for the sake of reducing depreciation is thus made apparent.

With the increasing mechanization of the steel industry these points become of greater importance year by year. The steel industry pays high wage rates, but its wage cost relative to other costs has been diminishing and the handling of charges upon investment is of increasing moment. There are times when it is as commendable that sales effort be restrained as that, under ordinary conditions, it should be aggressive. It is nearly three years now since Judge Gary said, at the Steel Corporation annual meeting, April 20, 1925: "Ever since the war the competition in the United States has been increasing—I will not say has been desperate, but I will say has been exceedingly strenuous," and since then a great deal more has occurred along the same line.

## Census of Consumption

PRELIMINARY work done by the Department of Commerce in its study of a census of consumption in the United States gives rise to disturbing thoughts regarding the full utility of that census. The matter is to be prosecuted with vigor at the time of the regular decennial census of population in 1930. It is designed to supplement our vast storehouse of knowledge on conditions of production in the United States. Such a study has been in contemplation for a long time; industry wants it as a further guide and frequent requests for it have been made.

One of the chief criticisms which might be directed against the consumption census, as it has so far developed, lies in its almost complete ignoring of the distribution of producer goods. This does not connote raw materials or goods in process of manufacture; but certainly the absorption by industry of such items as machine tools is worthy of a place in any consumption census which goes beyond foods and clothing. Hand tools going into the possession of carpenters and machinists are given their place in the census, because they are sold from retail stores. Machine tools should have the same consideration, regardless of the fact that the retailer does not know them.

Doubtless many other factors might prove to be missing on a careful study of the census returns for the small area already covered. Such a glaring example as the one cited, however, would make it appear desirable to survey the entire field of the proposed endeavor, so that when it does come to fruition it may represent something that shall have been worth while.

READERS of THE IRON AGE who desire to receive a copy of the index for the last six months of 1927 may have it, with our compliments, upon request. The index, of 24 pages, has just been completed.

# CORRESPONDENCE

## A Naval Officer on the Pending Program

*To the Editor:* I wish to bring to your attention certain features connected with the position of representative naval officers on the subject of the proposed naval building program now under consideration in Congress and by the country, with particular reference to the editorial on this subject in your issue of Jan. 19, entitled "A Too Costly Navy."

The position of representative opinion in the Navy may be, I believe, summarized in the following factors:

1. We need to balance our fleet by the addition of various auxiliary units to make it an effective instrument of national defense.

2. Concerned in any question of naval power is consideration of naval bases near our outlying possessions and strategically located harbors along the approaches and near the Panama Canal and along our lines of essential communication.

3. The fighting strength of fleets lies in their modern vessels, obsolete vessels being a liability rather than asset when opposed by modern vessels of their own type.

The above are believed to concern naval strength in the abstract. Any consideration of comparison or the subject of naval competition as raised in your editorial must, it is believed, include:

4. The building programs of other Powers since the Washington Conference.

5. The total fleets of other Powers, including modern vessels built, laid down and already authorized.

On the broad subject of naval power the Navy is believed to have two general functions, indeed responsibilities:

1. To recommend to the country the types of vessels and numbers in each type necessary to make our standardized capital ship strength an efficient and effective instrument of national defense.

2. To apprise the country of the relative strength from a technical standpoint of our Navy compared with other principal powers.

This latter appears very necessary, since naval strength is known by technical people to depend greatly on naval bases and strategically located harbors along the lines of essential communication or within the probable areas of war.

As an analysis of the lessons of history (an essential part of the training of responsible naval officers) so clearly reveals that an effective defensive force is the surest insurance of a rich nation against war, we conceive it therefore the duty of the Navy to advise the country on these two points. The weight given this advice is a matter to be decided by the higher authority responsible to the nation for public policy.

Referring specifically to your editorial, it would seem that the Navy would not attempt to enter into the controversial features of what the policy of the country should be regarding this building program, but we do feel concerned with some of the statements in your article. We feel, for example, that your table is somewhat misleading, as it does not mention completed large cruisers, and that any discussion of the cruiser question should include all modern cruisers of this type, not alone the 10,000-ton class, and should not include obsolete cruiser tonnage.

By "modern" is meant the classification used during and since the Washington Conference: namely, that "light cruisers" consist of combatant vessels less than 20 years old, from 3000 to 10,000 tons, with speed of 27 knots or greater. While obviously all classes of this type will not be equal in effectiveness, mere size or total tonnage are not conclusive determining factors either, for strength in this type depends also on numbers and on base and harbor facilities that may be available to these ships for fueling, shelter and repair.

Since other Powers have been building cruisers, along with other vessels, following the Washington Conference, and since the total proposed cruiser strength for this country would not in fact exceed in tonnage

or equal in numbers that already constructed or authorized by Great Britain, it is not believed fair to accuse the Navy of starting any competition in this type.

As stated before, it is considered to be the function of the Navy to recommend the numbers or tonnage of any type, not standardized by treaty, it considers necessary from a technical viewpoint. The tonnage proposals of this country at the late Geneva Conference were therefore obviously a matter for those responsible to the country for public policy to decide, after such consultation with naval advisers as they saw fit.

The British proposals at this conference that have been published do not, it is believed, contain simply an offer of cruiser parity at 400,000 tons, but, in fact, include in this a stipulation that would have limited the number of 10,000-ton cruisers to 12 for each of the two countries, and would have permitted the British to retain the most, at least, of their existing modern cruiser strength, to a total of considerably in excess of 600,000 tons. While it is believed doubtful that the British would actually prefer to limit their battle fleet cruiser strength to 12 vessels, they doubtless did, in fact, in arriving at their conclusion as to their needs, consider the number of bases and well located harbors that they possess throughout the world. It is considered equally necessary that the American Navy, in recommending to this country what it considers our needs in this type, consider also all factors involved in naval strength.

It may indeed be assumed that the Navy does consider some vessels necessary for commerce protection and for maintaining sea communication, since this country too is a maritime power and is dependent on sea communications, not only for trade but for various imports essential in war, as well as our communications with the Panama Canal and our insular possessions.

It is therefore believed to be not only the right but the duty of the Navy to state to the country the naval needs for national defense. This it considers it is doing in recommending the naval building program submitted to Congress by the Navy Department, with the authorized statement that it is not in opposition to the financial policy of the President.

In conclusion, I desire to express the appreciation I am sure the Navy must feel of the interest such a representative journal as THE IRON AGE, representative as it is of such a large factor in our country as the steel and allied industries, takes in this subject.

N. H. Goss,
Captain, United States Navy.

New York, Feb. 3.

## The Cruiser Feature of Our Naval Program

*To the Editor:* In the Jan. 19, 1928, issue of THE IRON AGE there appeared an editorial headed "A Too Costly Navy."

You are undoubtedly well aware of the fact that Great Britain has numerous possessions throughout the world where naval bases and supply stations are maintained. These bases are so located that it is entirely feasible for a 7500-ton British cruiser to cope with any situation that might arise and at the same time be close enough to a supply base to refuel. You also, of course, are aware that the United States does not have such bases distributed throughout the world. In so far as the Hawaiian and Philippine islands are concerned, the distance from the United States is such that a 7500-ton cruiser would be of no value at all on account of the relatively small fuel capacity of a 7500-ton cruiser as compared with a 10,000-ton cruiser.

If you would carefully read the various arguments presented by Admiral Jones and other American members to the Geneva Conference it should be quite clear to you why a 10,000-ton cruiser is essential to the United States and why it is not essential to the British. It should be quite easy to understand from the last information available why the United States would be at a very serious disadvantage if we do not have sufficient cruisers of 10,000 tons.

The Disarmament Conference of 1921 established the principle that ships were obsolete after 20 years. It is also quite well known that a cruiser having a speed of less than 25 or 27 knots is of no value as a cruiser.

In regard to your reference to the cheers that greeted the British proposal to lay down but one of the three cruisers projected in 1928, we are rather surprised that you should take such cognizance of such action, inasmuch as it is so generally known that this action was pure propaganda and was intended to influence the United States' action in regard to a new navy program that the President of the United States even referred to it in his last message to Congress. It seems axiomatic that the best way to prevent war is to be in a position to protect one's rights and commerce just as the best way to preserve law and order is to have a sufficient and well equipped police force in our modern cities.

Inasmuch as you have chosen to quote from "Brassey's Naval Annual," we believe that you would be interested in the table noted below giving a list of cruisers having effective age of 20 years or less and having a speed greater than 27 knots. (See table at bottom of page.)

From the table you will note that the effective cruiser tonnage totals:

| | British Empire | Japan | United States |
|---|---|---|---|
| Building ..... | 138,000 tons | 60,000 tons | 80,000 tons |
| Built ..... | 190,810 tons | 116,205 tons | 75,000 tons |
| Total .... | 328,810 tons | 176,205 tons | 155,000 tons |

This table does not take any cognizance of the cruisers projected by any of the above countries. However, even with the 250,000 additional tons of cruisers now projected by Congress the United States would not be on a parity with the British Empire when the cruisers projected by the British are also considered.

We trust that you will be able to give as much publicity to the above facts as you did to the statements quoted from "Brassey's Naval Annual."

R. T. S.

New York, Jan. 31.

## Makers of Sheets and Strip Steel May Combine Their Associations

A single association to embrace the activities of the National Association of Sheet and Tin Plate Manufacturers, the Cold-Rolled Strip Steel Institute and the Hot-Rolled Strip Steel Institute, is the object of a movement that has been started and has been the subject of discussion of interested manufacturers.

With the success that has attended continuous rolling of strips in sheet mill widths and the fact that a number of manufacturers of sheets have either installed or plan to install the new type of mill for mechanically producing sheets, a closer relationship of the two products has developed and with it has come a belief that trade association and sales promotion activities could be as effectively handled by one as by three separate agencies.

No information of a formal character yet has been provided, but there is admission that the plan has been discussed and the idea that there will be a merging of the three associations into one is strengthened by the fact that the presidency of the National Association of Sheet and Tin Plate Manufacturers has been vacant since the resignation of Walter C. Carroll became effective on Jan. 15, last, and no effort yet has been made to fill it.

CRUISERS BUILT AND BUILDING BY THREE POWERS

| | British Empire | Japan | United States |
|---|---|---|---|
| Building ..... | 14 ships of 138,000 tons | 6 ships of 60,000 tons | 8 ships of 80,000 tons |
| Built, 5 years age or less..... | 7 ships of 48,340 tons | 14 ships of 81,705 tons | 10 ships of 75,000 tons |
| Built, 6 to 10 years..... | 20 ships of 97,470 tons | 7 ships of 34,500 tons | None |
| Built, 11 to 15 years..... | 12 ships of 45,000 tons | None | None |

# January Iron Output Up Sharply

## Net Gain of 16 Furnaces the Feature—Actual Data Show Daily Rate Increased 5613 Tons or 6.4 Per Cent

COMPILATION of the actual data for the pig iron production in January shows that the estimates made by wire on Jan. 31, as published in THE IRON AGE Feb. 2, were about 100 tons per day less than the real figures.

Total pig iron production in January was 2,869,761 gross tons or 92,573 tons per day for the 31 days, against 2,695,755 tons or 86,960 tons per day for the 31 days in December. The increase last month over December was 5613 tons per day or about 6.4 per cent. This is the first increase in output since April, last year, and is the largest production since August, when the daily rate was 95,073 tons. A year ago the output was 100,123 tons per day.

### *Net Gain of 16 Furnaces*

A large gain in active furnaces was the feature. Twenty-one furnaces were blown in and five were shut down—a net gain of 16 for the month. This follows nine months of successive net losses. The nearest approach to so large a net increase was 14 in December, 1925, when 15 furnaces blew in and one was shut down.

Of the 21 furnaces blown in last month 13 belonged to the United States Steel Corporation, six to independent steel companies and two to merchant producers. The Steel Corporation shut down two furnaces, as did also merchant producers with only one independent steel company stack blown out. Thus the net gain of 16 furnaces was confined to steel companies with 11 credited to the Steel Corporation and five to independent steel companies.

### *Capacity Active on Feb. 1*

On Feb. 1 there were 185 furnaces blowing as compared with 169 on Jan. 1. The estimated daily rate of the 185 furnaces was 96,640 tons; the 169 furnaces on Jan. 1 had an estimated operating rate of 86,835 tons per day.

### *Manganese Alloy Output*

Production of ferromanganese in January was 22,298 tons or the largest since last July, when it was 26,394 tons. A substantial amount of spiegeleisen was made by two companies, but publication of the actual data is not now possible.

### *Possibly Active Furnaces Reduced*

The number of possibly active furnaces in the United States has been reduced by the dismantling of

*Daily Rate of Pig Iron Production by Months—Gross Tons*

| | Steel Works | Merchants* | Total |
|---|---|---|---|
| January, 1927 | 75,609 | 24,514 | 100,123 |
| February | 80,595 | 24,429 | 105,024 |
| March | 86,304 | 26,062 | 112,366 |
| April | 87,930 | 26,144 | 114,074 |
| May | 84,486 | 24,899 | 109,385 |
| June | 78,110 | 24,878 | 102,988 |
| July | 69,778 | 25,421 | 95,199 |
| August | 71,413 | 23,660 | 95,073 |
| September | 69,673 | 22,825 | 92,498 |
| October | 66,991 | 22,819 | 89,810 |
| November | 64,600 | 23,679 | 88,279 |
| December | 64,118 | 22,742 | 86,960 |
| January, 1928 | 69,520 | 23,053 | 92,573 |

*Includes pig iron made for the market by steel companies.

*Pig Iron Production by Districts, Gross Tons*

| | Jan. (31 days) | Dec. (31 days) | Nov. (30 days) | Oct. (31 days) |
|---|---|---|---|---|
| New York and Mass. | 203,715 | 199,726 | 212,778 | 232,422 |
| Lehigh Valley | 72,639 | 74,316 | 75,748 | 81,829 |
| Schuylkill Valley | 43,946 | 44,238 | 53,269 | 64,260 |
| Lower Susq. and Lebanon Valleys | 30,338 | 32,289 | 30,150 | 31,828 |
| Pittsburgh district | 582,497 | 523,875 | 495,005 | 540,525 |
| Shenango Valley | 77,023 | 58,982 | 64,752 | 77,106 |
| Western Penna. | 89,372 | 92,774 | 92,000 | 93,010 |
| Maryland, Virginia and Kentucky | 94,590 | 92,981 | 91,300 | 88,991 |
| Wheeling district | 108,188 | 114,030 | 110,055 | 110,222 |
| Mahoning Valley | 247,371 | 222,572 | 223,617 | 245,625 |
| Central and Northern Ohio | 313,697 | 295,179 | 306,395 | 324,793 |
| Southern Ohio | 32,480 | 32,413 | 32,750 | 32,954 |
| Illinois and Indiana | 608,771 | 537,892 | 508,545 | 506,438 |
| Mich., Minn., Mo., Wis., Colo. and Utah | 134,718 | 140,141 | 126,287 | 121,203 |
| Alabama | 224,132 | 227,775 | 219,478 | 224,533 |
| Tennessee | 6,284 | 6,572 | 6,247 | 8,373 |
| Total | 2,869,761 | 2,695,755 | 2,648,376 | 2,784,112 |

*Daily Average Production of Coke Pig Iron in the United States by Months Since Jan. 1, 1924—Gross Tons*

| | 1924 | 1925 | 1926 | 1927 | 1928 |
|---|---|---|---|---|---|
| Jan. | 97,384 | 108,720 | 106,974 | 100,123 | 92,573 |
| Feb. | 106,026 | 114,791 | 104,408 | 105,024 | ..... |
| Mar. | 111,809 | 114,975 | 111,032 | 112,366 | ..... |
| Apr. | 107,781 | 108,632 | 115,004 | 114,074 | ..... |
| May | 84,358 | 94,542 | 112,304 | 109,385 | ..... |
| June | 67,541 | 89,115 | 107,844 | 102,988 | ..... |
| ½ year | 95,794 | 105,039 | 109,660 | 107,351 | ..... |
| July | 57,577 | 85,936 | 103,978 | 95,199 | ..... |
| Aug. | 60,875 | 87,241 | 103,241 | 95,073 | ..... |
| Sept. | 68,442 | 90,873 | 104,543 | 92,498 | ..... |
| Oct. | 79,907 | 97,528 | 107,553 | 89,810 | ..... |
| Nov. | 83,656 | 100,767 | 107,890 | 88,279 | ..... |
| Dec. | 95,539 | 104,853 | 99,712 | 86,960 | ..... |
| Year | 85,075 | 99,735 | 107,043 | 99,266 | ..... |

*Coke Furnaces in Blast*

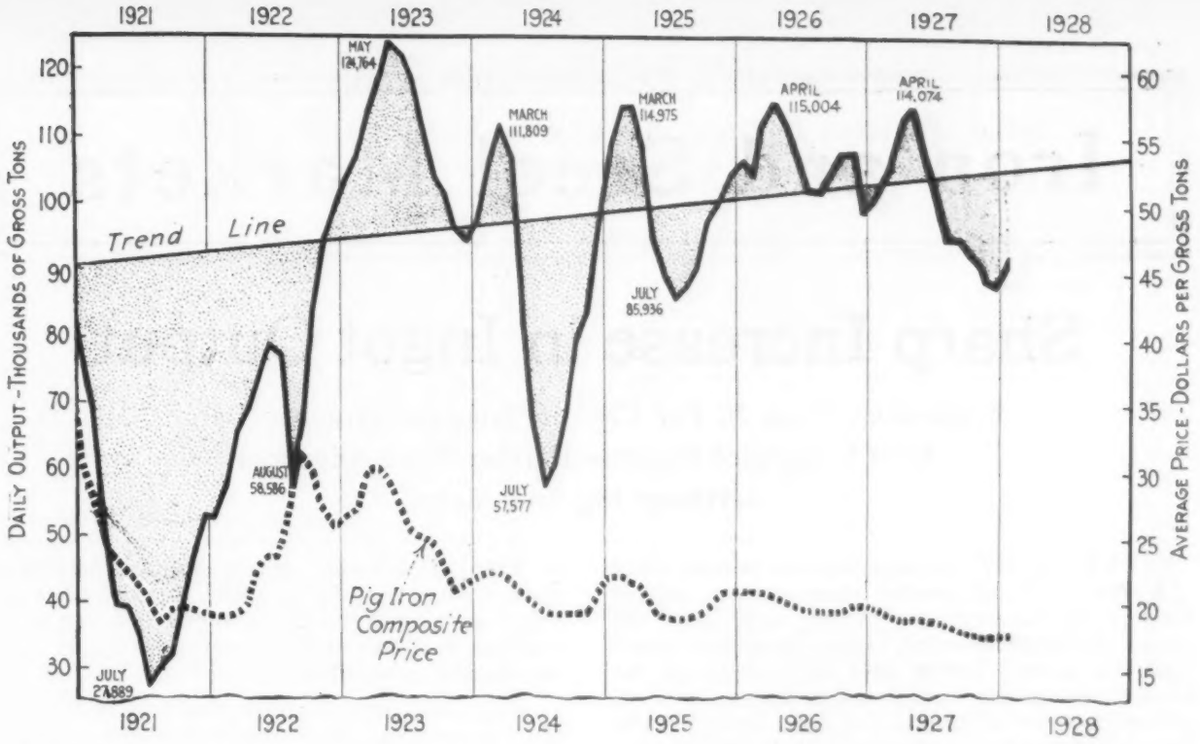
| Furnaces | Feb. 1 Number in Blast | Feb. 1 Capacity per Day | Jan. 1 Number in Blast | Jan. 1 Capacity Per Day |
|---|---|---|---|---|
| *New York:* | | | | |
| Buffalo | 12 | 5,795 | 12 | 5,060 |
| Other N. Y. and Mass. | 3 | 1,105 | 2 | 800 |
| New Jersey | 0 | .... | 0 | .... |
| *Pennsylvania:* | | | | |
| Lehigh Valley | 5 | 2,430* | 5 | 2,330 |
| Schuylkill Valley | 4 | 1,415 | 4 | 1,425 |
| Susquehanna Valley | 2 | 910 | 2 | 960 |
| Ferromanganese | 1 | 70 | 1 | 65 |
| Lebanon Valley | 0 | .... | 0 | .... |
| Ferromanganese | 0 | .... | 0 | .... |
| Pittsburgh District | 33 | 19,800 | 27 | 16,565 |
| Ferro and Spiegel. | 1 | 250 | 2 | 330 |
| Shenango Valley | 6 | 2,840 | 5 | 2,250 |
| Western Pennsylvania | 5 | 2,485 | 5 | 2,815 |
| Ferromanganese | 2 | 400 | 2 | 280 |
| Maryland | 5 | 2,470 | 5 | 2,360 |
| Wheeling District | 6 | 3,490 | 6 | 3,690 |
| *Ohio:* | | | | |
| Mahoning Valley | 15 | 8,700 | 12 | 7,200 |
| Central and Northern | 18 | 10,230 | 17 | 9,800 |
| Southern | 4 | 1,045 | 4 | 1,065 |
| Illinois and Indiana | 33 | 21,200 | 27 | 17,350 |
| Mich., Wis. and Minn. | 6 | 2,680 | 7 | 3,040 |
| Colo., Mo. and Utah | 4 | 1,645* | 3 | 1,300 |
| *The South:* | | | | |
| Virginia | 1 | 215 | 1 | 220 |
| Kentucky | 1 | 365 | 1 | 370 |
| Alabama | 17 | 6,900 | 18 | 7,360 |
| Tennessee | 1 | 200 | 1 | 200 |
| Total | 185 | 96,640 | 169 | 86,835 |

*Includes spiegeleisen.

*Production of Coke Pig Iron in United States by Months, Beginning Jan. 1, 1926—Gross Tons*

| | 1926 | 1927 | 1928 |
|---|---|---|---|
| Jan. | 3,316,201 | 3,103,820 | 2,869,761 |
| Feb. | 2,923,415 | 2,940,679 | ..... |
| Mar. | 3,441,986 | 3,483,362 | ..... |
| Apr. | 3,450,122 | 3,422,226 | ..... |
| May | 3,481,428 | 3,390,940 | ..... |
| June | 3,235,309 | 3,089,651 | ..... |
| ½ year | 19,848,461 | 19,430,678 | ..... |
| July | 3,223,338 | 2,951,160 | ..... |
| Aug. | 3,200,479 | 2,947,276 | ..... |
| Sept. | 3,136,293 | 2,774,949 | ..... |
| Oct. | 3,334,132 | 2,784,112 | ..... |
| Nov. | 3,236,707 | 2,648,376 | ..... |
| Dec. | 3,091,060 | 2,695,755 | ..... |
| Year* | 39,070,470 | 36,232,306 | ..... |

*These totals do not include charcoal pig iron. The 1926 production of this iron was 163,880 tons.




**Daily Pig Iron Output in January Was 6.4 Per Cent More Than in December; Composite Price Increases Slightly**

*Inclined line represents the gradually increasing theoretical needs of the country, and shows that production is now below the so-called normal. Dotted line represents* THE IRON AGE *composite price*

the Hokendauqua furnace of the Thomas Iron Co. in Lehigh Valley, the abandonment of the No. 1 Swede furnace of the Alan Wood Iron & Steel Co. in the Schuylkill Valley, the scrapping of the Buena Vista stack of the Alleghany Ore & Iron Corporation in Virginia, the discontinuance of the No. 1 Hazelton furnace of the Republic Iron & Steel Co. in the Mahoning Valley, the abandonment of the two Oxmoor stacks of the Tennessee Coal, Iron & Railroad Co. in Alabama and the dismantling of the Standard furnace of the Tennessee Product Corporation in Tennessee. This reduces the number of effective blast furnace units in the country from 357 to 350.

*Furnaces Blown In and Out*

Among the furnaces blown in during January were No. 1 Donner furnace in the Buffalo district, and No. 2 Northern furnace in New York; one furnace at the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; two Carrie, one Duquesne and two Edgar Thomson furnaces of the Carnegie Steel Co. and one Midland furnace of the Pittsburgh Crucible Steel Co. in the Pittsburgh district; one Farrell furnace of the Carnegie Steel Co. in the Shenango Valley; two Ohio furnaces of the Carnegie Steel Co., and one Haselton furnace of the Republic Iron & Steel Co. in the Mahoning Valley; one River furnace in northern Ohio; two South Chicago furnaces, three Gary furnaces, and one Inland furnace in the Chicago district, and the furnace of the Columbia Steel Corporation in Utah.

Among the furnaces blown out or banked during January were one Buffalo furnace of the Hanna Furnace Co. in the Buffalo district; one furnace at the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; one Edgar Thomson furnace of the Carnegie Steel Co. in the Pittsburgh district; the Mayville furnace in Wisconsin, and one Bessemer furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama.

*Production of Steel Companies for Own Use—Gross Tons*

| | Total Iron Spiegel and Ferro | | Spiegeleisen and Ferromanganese* | | | |
|---|---|---|---|---|---|---|
| | | | 1927 | | 1928 | |
| | 1927 | 1928 | Fe-Mn | Spiegel | Fe-Mn | Spiegel |
| Jan. | 2,343,881 | 2,155,133 | 31,844 | 7,486 | 22,298 | † |
| Feb. | 2,256,651 | ..... | 24,560 | 7,045 | .... | .... |
| Mar. | 2,675,417 | ..... | 27,834 | 7,650 | .... | .... |
| Apr. | 2,637,919 | ..... | 24,735 | 12,907 | .... | .... |
| May | 2,619,078 | ..... | 28,734 | 9,788 | .... | .... |
| June | 2,343,409 | ..... | 29,232 | 10,535 | .... | .... |
| ½ year | 14,876,355 | ..... | 166,939 | 55,411 | .... | .... |
| July | 2,163,101 | ..... | 26,394 | 9,350 | .... | .... |
| Aug. | 2,213,815 | ..... | 21,279 | 9,104 | .... | .... |
| Sept. | 2,090,200 | ..... | 20,675 | 6,037 | .... | .... |
| Oct. | 2,076,722 | ..... | 17,710 | 6,129 | .... | .... |
| Nov. | 1,938,043 | ..... | 17,851 | 6,521 | .... | .... |
| Dec. | 1,987,652 | ..... | 20,992 | 6,816 | .... | .... |
| Year | 27,345,888 | ..... | 291,840 | 99,368 | .... | .... |

*Includes output of merchant furnaces.
†Data not available.

## Round Table Discussions on Blast Furnace and Coke Ovens

A program of wide interest to blast furnace and coke oven operators has been arranged for the mid-winter meeting of the Eastern States Blast Furnace and Coke Oven Association to be held at the William Penn Hotel, Pittsburgh, Friday, Feb. 17. Separate round table discussions on coke plant and blast furnace matters are to be held during the morning and in the afternoon there will be a general meeting at which both coke oven and blast furnace operating subjects will be considered. In the evening, following the dinner, F. H. Willcox, vice-president Freyn Engineering Co., Chicago, will be the principal speaker and his subject will be "Blast Furnace Practice in Europe."

Complaint has been filed with the Interstate Commerce Commission by the Continental Steel Co., Kokomo, Ind., charging that rates on the transportation of scrap iron and steel from points in Ohio, Michigan, Illinois, Wisconsin, Iowa, Nebraska, Oklahoma, Texas, Missouri, Arkansas and Kentucky to Kokomo are relatively higher than the rates on old material to Chicago, St. Louis and a number of other consuming points.

# Iron and Steel Markets

## Sharp Increase in Ingot Output

### Production Rises 26 Per Cent in January—Another Large Gain in Unfilled Orders—Further Price Advances —Heavy Pig Iron Sales

A TWENTY-SIX per cent increase in steel ingot production and another sharp gain in unfilled business in January have further emphasized the extent of market recovery. Steel output last month made the second largest gain on record, and the Steel Corporation's unfilled orders statement is expected to show an increase of more than 300,000 tons—the largest, excepting that of 518,430 tons in the previous month, since December, 1925.

Steel output has continued to gain in February. Current operations of Steel Corporation plants are placed at 88 per cent of capacity, as compared with 84 per cent last week and 60 per cent in late December. Recent increases in production have been sharpest at Chicago, where ingot output averages 92 per cent, as compared with 88 per cent last week. At Pittsburgh, operations are reported as unchanged at 75 to 80 per cent.

The trend of prices is still upward, in contrast with the situation a year ago when prices were declining. Moreover, the present rate of production is a more accurate measure of consumption than was true at that time, when there was some stocking of steel in advance of actual specifications. A marked difference also is seen in the fact that the current period was not preceded by an autumn expansion in business. Present recovery is a logical consequence of underbuying in the closing months of 1927.

Comparisons with recent years are chiefly of interest because of the recurrence of heavy production in the first quarter. Doubtless this has been due to roughly coinciding upswings in demand, but buying because of peculiarities of given seasons of the year is of diminishing importance. Such seasonal fluctuations are disappearing even in structural steel, tin plate and automobile steel, and remain a factor mainly in wire products and rails.

Price advances during the week include increases of $3 a ton on fender stock strips and $2 a ton on cold-finished bars and rail steel bars. Sheet prices are also stronger and on new business in black sheets 2.90c., Pittsburgh, has become the minimum of most makers. Higher prices on these products, as well as those recently announced on wire products, cannot become fully effective until next quarter, since most buyers are covered until April 1 at lower quotations.

These forward obligations were doubtless driven in by recent evidences of market strength, but rising prices normally result in heavier commitments. The fact that the advance in plates, shapes and bars to 1.85c., Pittsburgh, caused hesitant buyers to place pending business at 1.80c., a price at least $1 a ton above that ruling on fourth quarter specifications, indicates that one upward step in prices has become established.

Railroads are taking more steel both in the form of shipments against recent rail contracts and in material for cars. The Southern Railway and a Western road have added a total of about 30,000 tons to rail bookings, and at Chicago 50,000 tons remains to be closed. Sales of track accessories at Chicago totaled 12,000 tons. The St. Louis-San Francisco has ordered 4000 freight cars requiring more than 45,000 tons of steel.

Structural steel business in prospect has been enlarged by inquiries for nearly 54,000 tons, including 18,000 tons for a new civic opera house in Chicago and four projects in New York totaling 21,000 tons. Awards in the week of 44,500 tons included 9000 tons for a viaduct in Cleveland, 5000 tons for a bridge in Pittsburgh and 5000 tons for a New York office building. At St. Louis 3000 tons of reinforcing steel is on inquiry for a warehouse.

Pig iron sales increased sharply in the week in the East and at Chicago and Cleveland. In the territory in which New York and Philadelphia are centers, the total business was fully 75,000 tons and possibly more. This included 20,000 to 25,000 tons of basic bought by an eastern Pennsylvania steel company and about 20,000 tons for a Delaware River cast iron pipe company. At Cleveland 34,000 tons was sold, representing largely the needs of foundries which have been using up supplies ordered in the last quarter. Except in eastern Pennsylvania, where producers have advanced foundry iron to a basis of $20, furnace, prices remain unchanged, and the eastern Pennsylvania rise has not been tested.

Steel ingot production in January was 3,959,904 tons, or 152,304 tons a day, according to data compiled by the American Iron and Steel Institute. The increase over December output was 809,559 tons, or 25.7 per cent. This gain is exceeded only by that of March, 1918.

At 53.25c. per lb., spot Straits tin has sold at the lowest level since April 21, 1925, when the price was 52.62½c.

Stronger sheet prices have caused THE IRON AGE composite for finished steel to advance to 2.350c. from 2.336c. last week. It is now higher than at any time since last September and is only about 1 per cent below its level a year ago. The pig iron composite remains at $17.67 for the fourth week.

# A Comparison of Prices

**Advances Over the Previous Week in Heavy Type, Declines in Italics**
**At Date, One Week, One Month, and One Year Previous**

| **Pig Iron,** Per Gross Ton: | Feb. 7, 1928 | Jan. 31, 1928 | Jan. 10, 1928 | Feb. 8, 1927 |
|---|---|---|---|---|
| No. 2, fdy., Philadelphia | $20.26 | $20.26 | $19.76 | $21.76 |
| No. 2, Valley furnace | 17.25 | 17.25 | 17.25 | 18.50 |
| No. 2, Southern, Cin'ti | 19.69 | 19.69 | 19.69 | 21.69 |
| No. 2, Birmingham | 16.00 | 16.00 | 16.00 | 18.00 |
| No. 2 foundry, Chicago* | 18.50 | 18.50 | 18.50 | 20.50 |
| Basic, del'd eastern Pa | 19.50 | 19.50 | 19.50 | 21.25 |
| Basic, Valley furnace | 17.00 | 17.00 | 17.00 | 18.00 |
| Valley Bessemer, del'd P'gh | 19.26 | 19.26 | 19.26 | 20.76 |
| Malleable, Chicago* | 18.50 | 18.50 | 18.50 | 20.50 |
| Malleable, Valley | 17.25 | 17.25 | 17.25 | 18.50 |
| Gray forge, Pittsburgh | 18.51 | 18.51 | 18.51 | 19.76 |
| L. S. charcoal, Chicago | 27.04 | 27.04 | 27.04 | 27.04 |
| Ferromanganese, furnace | 100.00 | 100.00 | 100.00 | 100.00 |
| **Rails, Billets, etc.,** Per Gross Ton: | | | | |
| O.-h. rails, heavy, at mill | $43.00 | $43.00 | $43.00 | $43.00 |
| Light rails at mill | 36.00 | 36.00 | 36.00 | 36.00 |
| Bess. billets, Pittsburgh | 33.00 | 33.00 | 33.00 | 33.00 |
| O.-h. billets, Pittsburgh | 33.00 | 33.00 | 33.00 | 33.00 |
| O.-h. sheet bars, P'gh | 34.00 | 34.00 | 34.00 | 34.00 |
| Forging billets, P'gh | 38.00 | 38.00 | 38.00 | 40.00 |
| O.-h. billets, Phila | 38.30 | 38.30 | 38.30 | 38.30 |
| Wire rods, Pittsburgh | 42.00 | 42.00 | 42.00 | 43.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, grvd. steel, P'gh, lb. | **1.85** | 1.80 | 1.80 | 1.90 |
| **Finished Iron and Steel,** | | | | |
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Iron bars, Philadelphia | 2.12 | 2.12 | 2.12 | 2.22 |
| Iron bars, Chicago | 1.90 | 1.90 | 1.90 | 2.00 |
| Steel bars, Pittsburgh | 1.85 | 1.85 | 1.80 | 1.90 |
| Steel bars, Chicago | 1.95 | 1.95 | 1.90 | 2.00 |
| Steel bars, New York | 2.19 | 2.19 | 2.14 | 2.24 |
| Tank plates, Pittsburgh | 1.85 | 1.85 | 1.80 | 1.85 |
| Tank plates, Chicago | 1.95 | 1.95 | 1.90 | 2.00 |
| Tank plates, New York | 2.17½ | 2.17½ | 2.12½ | 2.19 |
| Beams, Pittsburgh | 1.85 | 1.85 | 1.80 | 1.90 |
| Beams, Chicago | 1.95 | 1.95 | 1.90 | 2.00 |
| Beams, New York | 2.14½ | 2.14½ | 2.09½ | 2.24 |
| Steel hoops, Pittsburgh | 2.20 | 2.20 | 2.20 | 2.20 |

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

| **Sheets, Nails and Wire,** | Feb. 7, 1928 | Jan. 31, 1928 | Jan. 10, 1928 | Feb. 8, 1927 |
|---|---|---|---|---|
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Sheets, black, No. 24, P'gh | **2.90** | 2.80 | 2.80 | 2.80 |
| Sheets, black, No. 24, Chicago dist. mill | 3.00 | 3.00 | 3.00 | 2.90 |
| Sheets, galv., No. 24, P'gh | 3.65 | 3.65 | 3.65 | 3.75 |
| Sheets, galv., No. 24, Chicago dist. mill | 3.85 | 3.85 | 3.85 | 3.85 |
| Sheets, blue, 9 & 10, P'gh | 2.10 | 2.10 | 2.10 | 2.20 |
| Sheets, blue, 9 & 10, Chicago dist. mill | 2.20 | 2.20 | 2.20 | 2.30 |
| Wire nails, Pittsburgh | 2.55 | 2.55 | 2.55 | 2.55 |
| Wire nails, Chicago dist. mill | 2.60 | 2.60 | 2.55 | 2.60 |
| Plain wire, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.40 |
| Plain wire, Chicago dist. mill | 2.45 | 2.45 | 2.45 | 2.45 |
| Barbed wire, galv., P'gh | 3.25 | 3.25 | 3.25 | 3.25 |
| Barbed wire, galv., Chicago dist. mill | 3.25 | 3.25 | 3.25 | 3.30 |
| Tin plate, 100 lb. box, P'gh | $5.25 | $5.25 | $5.25 | $5.50 |
| **Old Material,** Per Gross Ton: | | | | |
| Heavy melting steel, P'gh | **$15.00** | $14.75 | $15.25 | $16.00 |
| Heavy melting steel, Phila. | 13.50 | 13.50 | 13.50 | 14.50 |
| Heavy melting steel, Ch'go | 12.50 | 12.50 | 12.50 | 13.00 |
| Carwheels, Chicago | 14.00 | 14.00 | 14.00 | 15.00 |
| Carwheels, Philadelphia | 15.50 | 15.50 | 15.50 | 16.00 |
| No. 1 cast, Pittsburgh | 14.50 | 14.50 | 14.50 | 15.75 |
| No. 1 cast, Philadelphia | 16.00 | 16.00 | 16.00 | 17.00 |
| No. 1 cast, Ch'go (net ton) | 14.50 | 14.50 | 14.50 | 16.50 |
| No. 1 RR. wrot, Phila. | 15.25 | 15.25 | 15.25 | 17.00 |
| No. 1 RR. wrot, Ch'go (net) | 11.00 | 11.00 | 11.50 | 11.75 |
| **Coke, Connellsville,** Per Net Ton at Oven: | | | | |
| Furnace coke, prompt | $2.60 | $2.60 | $2.75 | $3.25 |
| Foundry coke, prompt | 3.75 | 3.75 | 3.75 | 4.25 |
| **Metals,** | | | | |
| *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
| Lake copper, New York | 14.25 | 14.25 | 14.25 | 12.75 |
| Electrolytic copper, refinery | 13.87½ | 13.87½ | 13.87½ | 12.30 |
| Zinc, St. Louis | *5.65* | 5.67½ | 5.65 | 6.55 |
| Zinc, New York | *6.00* | 6.02½ | 6.00 | 6.90 |
| Lead, St. Louis | *6.22½* | 6.30 | 6.30 | 7.22½ |
| Lead, New York | 6.50 | 6.50 | 6.50 | 7.40 |
| Tin (Straits), New York | *53.25* | 54.62½ | 56.12½ | 69.50 |
| Antimony (Asiatic), N. Y. | *11.00* | 11.25 | 11.25 | 15.25 |

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

# Pittsburgh

## Price Advances Extend to Fender Stock Strips and Cold-Finished Steel Bars

PITTSBURGH, Feb. 7.—Events of the week have to do with prices rather than with changes in the character of buying or in the rate of iron and steel plant operations. Since a week ago, the $3 a ton advance to 4.15c., base Pittsburgh, on automobile body sheets has become general, and because full finished sheets and cold-rolled strips are competitive for automobile fenders, makers of fender stock strips have announced an advance of $3 a ton. An advance of $2 a ton has been announced on cold-finished steel bars and shafting. Meanwhile, sheet manufacturers are getting stronger price ideas on the common finishes and efforts continue to put strips, both hot and cold-rolled, at definitely higher levels. New quantity extras, the same as those now demanded on bars and small shapes, have been applied to hoops and bands, which means higher prices for lots of less than 2 tons of a size.

Manufacturers are well obligated for this quarter on most of the products on which advances have been announced and the higher prices therefore represent largely the ideas of the steel trade on second quarter business. While the latest advance on cold-finished steel bars is announced as applying only on business written for shipment over the remainder of this quarter, this stipulation is generally regarded as an assurance that they will not have to absorb a further advance in prices of hot-rolled bars, which it is hinted will be made before books are formally opened for second quarter.

There is a steady flow of specifications on existing commitments, and here and there is some evidence that consumers underestimated their requirements and have had to make fresh purchases, which in some cases carry the full quotations of producers. As a general rule, the requirements of consumers are not exceeding the tonnages they have on order or on which they are protected. Consumption of steel is increasing, as it usually does at this time of the year. The automobile industry made a substantial increase in output in January as compared with December, and all indications are that it will go still higher in production this month, but it is also a fact that this industry is not doing as well as it did at this time last year, nor is it taking steel as freely as many expected it would by this time.

No appreciable increase is observed in the demand for oil country pipe, as the oil industry has not yet succeeded in overcoming the evils of overproduction. Railroad demands are fair and the inquiry from that source is promising. Not much structural steel business is developing in this district, and the national picture is one of a few projects of size rather than one of many small jobs. The agricultural implement industry is busier now than it was during the last few months of last year. Railroads are now taking large deliveries of rails, which helps to explain the present volume of production. The market, however, derives some of its life from the fact that buyers take more seriously than usual the price advances that have been made and are taking out steel a little more freely than they might if there was not the possibility that delay may mean higher costs.

Steel ingot production in this and nearby districts still may be estimated at from 75 to 80 per cent of capacity. There is not the tendency of a year ago to produce in advance of actual specifications, and the present rate of production is a more accurate measure

of consumption than was the slightly higher rate of a year ago, when not a few producers were operating on the basis of the probable requirements of their customers.

**Pig Iron.**—New business in pig iron has rarely been lighter than at present. Melters are depending very largely on contract purchases, but it is encouraging to producers that they are taking shipments with much more freedom than they did in the closing weeks of last year. There are hopes of higher prices, but they seem to rest largely on the belief that as the steel industry gets busier there will be less steel company iron on the market. There is, however, no evidence yet that the steel companies which ordinarily have iron for sale have withdrawn from the merchant market. Only small lots of the various grades are being sold and there is no occasion to change prices. Two small lots of Bessemer iron recently were sold at $18, Valley furnace, but the inquiries were not general and as a steel company was the seller it is supposed that reciprocal considerations enabled the seller to get a price above the ruling market. The Shenango Furnace Co. has put on its No. 1 furnace and for a short time will have both of its furnaces going, the starting up of the idle furnace being in preparation for blowing out its No. 3 stack.

W. P. Snyder & Co. make the average price of Bessemer iron shipped from Valley furnaces in January $17.50, and of basic iron $17, as compared with $17.57 and $17, respectively, in December.

*Prices per gross ton, f.o.b. Valley furnace:*

| | |
|---|---|
| Basic | $17.00 |
| Bessemer | 17.50 |
| Gray forge | 16.75 |
| No. 2 foundry | 17.25 |
| No. 3 foundry | 16.75 |
| Malleable | $17.25 to 17.50 |
| Low phosphorus, copper free | 27.00 |

Freight rate to the Pittsburgh or Cleveland district, $1.76.

**Ferroalloys.**—Consumers of ferromanganese are specifying guardedly because of fairly large carryover stocks from late last year, but the movement of other commonly used ferroalloys is steady and well up to monthly quotas. Prices are unchanged.

**Semi-Finished Steel.**—There is little or no open market trading in billets, slabs and sheet bars, non-integrated manufacturers merely meeting increased requirements by enlarging specifications to regular sources of supply. There are no suggestions of a change in prices. Pipe skelp orders likewise are largely on a requirement basis and the few pipe makers that now buy their steel no longer seek competitive bids. The open quotation is that of plates, or 1.85c. There has been little or no test of the new base price on wire rods, because important tonnage buyers were covered for this quarter at materially lower prices, most of the tonnage now moving on first quarter contracts carrying a price of $40, with a little at $42.

**Rails and Track Supplies.**—The local standard-section rail mill is producing and shipping actively against an order book that will engage capacity well toward the middle of the year, provided the roads take out all the tonnage ordered. Light-section rails continue to reflect the unfavorable coal situation. Makers of spikes and other track accessories have fair-sized order books, but specifications are moderate.

**Wire Products.**—Makers have taken some small-lot orders at the recently advanced prices, but most buyers are protected for this quarter at lower prices and new business does not amount to much. Specifications are reported to be steady and of good volume on regular contracts for this quarter, against which specifying can be done for the next six weeks. Nails at $2.65, base, per keg, Pittsburgh, and plain wire at $2.50, base, per 100 lb., are largely a second quarter proposition except for stray tonnages beyond regular contracts.

**Tubular Goods.**—Steady increase is noted in the demand for standard-weight pipe, and if all the tonnage that is embraced in projected gas and oil pipe lines should be placed in the near future, a number of manufacturers would not have to worry about mill operations. Except for the demands from California in connection with deep well drilling, the call for oil country pipe is moderate. The pipe lines mentioned as being nearest a formal inquiry are one to run from Monroe, La., to St. Louis, with a spur into Memphis, Tenn., and an extension to Kansas City of the line from Amarillo, Tex., to Wichita, Kan. The former is said to have been approved by the bankers, but the actual inquiry is yet to reach any of the mills, and in view of the necessity of securing the right of way and the franchise necessary to get into the city of St. Louis, it is probably good opinion that the order will not come out in the next few months. Fairly good demand is noted for boiler tubes for locomotive construction and repair and mechanical tubing is being taken steadily by motor car builders. Tubular mill operations range from 60 to 70 per cent of capacity.

**Sheets.**—Heavy operations of independent sheet mills in January seem to have affected February operations, and a few mills appear to need business to keep going. Last month's operations by independent mills are estimated at 85 per cent of capacity, but shipments fell considerably below that rate and there are now supplies to meet tonnage releases yet to come in. Operations this month are more in keeping with specifications and they form most of the business, since so large a percentage of consumers secured coverage for this quarter long before it began. In spite of these conditions, however, the general tendency of prices is higher and some fair-sized lots of black sheets have been placed at the full price of 2.90c., base Pittsburgh, representing purchases by buyers who underestimated their requirements. Most mills want 2.90c., base, for black; 3.75c., base, for galvanized, and 4.15c., base, on automobile body sheets, the latter quotation having been generally adopted since a week ago, presumably for the reason that tonnage now entered would be an obligation against second quarter tonnage and the common desire is to bring up the price average for that period. Demands from the motor car and body builders still are below what it was expected they would be by this time. Car builders have somewhat modified the inspections they recently set up on sheets and again are accepting shipments on the basis of former specifications.

## The Iron Age Composite Prices

### Finished Steel

Feb. 7, 1928, 2.350c. a Lb.

| | |
|---|---|
| One week ago | 2.336c. |
| One month ago | 2.314c. |
| One year ago | 2.374c. |
| 10-year pre-war average | 1.689c. |

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 86 per cent of the United States output of finished steel.

| | High | | Low | |
|---|---|---|---|---|
| *1927* | 2.453c., | Jan. 4; | 2.293c., | Oct. 25 |
| *1926* | 2.453c., | Jan. 5; | 2.403c., | May 18 |
| *1925* | 2.560c., | Jan. 6; | 2.396c., | Aug. 18 |
| *1924* | 2.789c., | Jan. 15; | 2.460c., | Oct. 14 |
| *1923* | 2.824c., | Apr. 24; | 2.446c., | Jan. 2 |

### Pig Iron

Feb. 7, 1928, $17.67 a Gross Ton

| | |
|---|---|
| One week ago | $17.67 |
| One month ago | 17.59 |
| One year ago | 19.13 |
| 10-year pre-war average | 15.72 |

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

| | High | | Low | |
|---|---|---|---|---|
| *1927* | $19.71, | Jan. 4; | $17.54, | Nov. 1 |
| *1926* | 21.54, | Jan. 5; | 19.46, | July 13 |
| *1925* | 22.50, | Jan. 13; | 18.96, | July 7 |
| *1924* | 22.88, | Feb. 26; | 19.21, | Nov. 3 |
| *1923* | 30.86, | Mar. 20; | 20.77, | Nov. 20 |

# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

*Soft Steel*

| | Base Per Lb. |
|---|---|
| F.o.b. Pittsburgh mills | 1.85c. |
| F.o.b. Chicago | 1.95c. to 2.05c. |
| Del'd Philadelphia | 2.17c. |
| Del'd New York | 2.19c. |
| Del'd Cleveland | 2.04c. |
| F.o.b. Cleveland | 1.85c. |
| F.o.b. Lackawanna | 1.95c. |
| F.o.b. Birmingham | 2.10c. |
| C.i.f. Pacific ports | 2.35c. |
| F.o.b. San Francisco mills | 2.35c. to 2.40c. |

*Billet Steel Reinforcing*

| | |
|---|---|
| F.o.b. Pittsburgh mills | 1.90c. to 1.95c. |
| F.o.b. Birmingham | 2.05c. to 2.15c. |

*Rail Steel*

| | |
|---|---|
| F.o.b. mills east of Chicago district | 1.75c. |
| F.o.b. Chicago Heights mill | 1.80c. |

*Iron*

| | |
|---|---|
| Common iron, f.o.b. Chicago | 1.90c. |
| Refined iron, f.o.b. P'gh mills | 2.75c. |
| Common iron, del'd Philadelphia | 2.12c. |
| Common iron, del'd New York | 2.14c. |

## Tank Plates

| | Base Per Lb. |
|---|---|
| F.o.b. Pittsburgh mills | 1.85c. |
| F.o.b. Chicago | 1.95c. to 2.05c. |
| F.o.b. Birmingham | 2.10c. |
| Del'd Cleveland | 2.04c. |
| Del'd Philadelphia | 2.10c. |
| F.o.b. Coatesville | 2.00c. |
| F.o.b. Sparrows Point | 2.00c. |
| F.o.b. Lackawanna | 1.95c. |
| Del'd New York | 2.17½c. |
| C.i.f. Pacific ports | 2.30c. |

## Structural Shapes

| | Base Per Lb. |
|---|---|
| F.o.b. Pittsburgh mills | 1.85c. |
| F.o.b. Chicago | 1.95c. to 2.05c. |
| F.o.b. Birmingham | 2.10c. |
| F.o.b. Lackawanna | 1.95c. |
| F.o.b. Bethlehem | 2.00c. |
| Del'd Cleveland | 2.04c. |
| Del'd Philadelphia | 2.13c. |
| Del'd New York | 2.14½c. |
| C.i.f. Pacific ports | 2.35c. |

## Hot-Rolled Flats (Hoops, Bands and Strips)

| | Base Per Lb. |
|---|---|
| All gages, 2 in. and narrower, P'gh, | 2.10c. to 2.20c. |
| All gages, wider than 2 in., to 6 in., P'gh, | 2.05c. to 2.10c. |
| *All gages, 6 in. and wider, P'gh | 1.85c. to 1.90c. |
| All gages, narrower than 6 in., Chicago, | 2.20c. to 2.40c. |
| All gages, 6 in. and wider, Chicago, | 2.00c. to 2.20c. |

*Mills follow plate or sheet prices according to gage on wider than 14 in.

## Cold-Finished Steel

| | Base Per Lb. |
|---|---|
| Bars, f.o.b. Pittsburgh mills | 2.20c. to 2.25c. |
| Bars, f.o.b. Chicago | 2.20c. to 2.30c. |
| Bars, Cleveland | 2.30c. to 2.35c. |
| Shafting, ground, f.o.b. mill | *2.45c. to 2.90c. |
| Strips, under 12 in., 1 up to 3 tons, P'gh, | 3.00c. to 3.15c. |
| Strips, under 12 in., 1 up to 3 tons, Cleveland | 3.00c. to 3.15c. |
| Strips, under 12 in., 1 up to 3 tons, del'd Chicago | 3.30c. to 3.45c. |
| Strips, under 12 in., 1 up to 3 tons, Worcester | 3.25c. to 3.40c. |

*According to size.

## Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

| | Base Per Keg |
|---|---|
| Wire nails | $2.55 to $2.65 |
| Galvanized nails | 4.55 to 4.65 |
| Galvanized staples | 3.25 to 3.35 |
| Polished staples | 3.00 to 3.10 |
| Cement coated nails | 2.55 to 2.65 |

| | Base Per 100 Lb. |
|---|---|
| Bright plain wire, No. 9 gage | $2.40 to $2.50 |
| Annealed fence wire | 2.55 to 2.65 |
| Spring wire | 3.40 to 3.50 |
| Galv'd wire, No. 9 | 3.00 to 3.10 |
| Barbed wire, galv'd | 3.25 to 3.35 |
| Barbed wire, painted | 3.00 to 3.10 |

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., (wire) mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

*Woven Wire Fence*

*Base to Retailers Per Net Ton*

| | |
|---|---|
| F.o.b. Pittsburgh | $65.00 |
| F.o.b. Cleveland | 65.00 |
| F.o.b. Anderson, Ind. | 66.00 |
| F.o.b. Chicago district mills | 67.00 |
| F.o.b. Duluth | 68.00 |
| F.o.b. Birmingham | 68.00 |

## Sheets

*Blue Annealed*

| | Base Per Lb. |
|---|---|
| Nos. 9 and 10, f.o.b. Pittsburgh | 2.10c. to 2.20c. |
| Nos. 9 and 10, f.o.b. Chicago dist. mill, | 2.20c. to 2.30c. |
| Nos. 9 and 10, del'd Cleveland | 2.29c. |
| Nos. 9 and 10, del'd Philadelphia | 2.42c. to 2.52c. |
| Nos. 9 and 10, f.o.b. Birmingham | 2.25c. to 2.30c. |

*Box Annealed, One Pass Cold Rolled*

| | |
|---|---|
| No. 24, f.o.b. Pittsburgh | 2.90c. |
| No. 24, f.o.b. Chicago dist. mill | 3.00c. |
| No. 24, del'd Cleveland | 3.09c. |
| No. 24, del'd Philadelphia | 3.22c. |
| No. 24, f.o.b. Birmingham | 3.05c. |

*Metal Furniture Sheets*

| | |
|---|---|
| No. 24, f.o.b. Pittsburgh, A grade | 3.95c. to 4.05c. |
| No. 24, f.o.b. Pittsburgh, B grade | 3.75c. to 3.85c. |

*Galvanized*

| | |
|---|---|
| No. 24, f.o.b. Pittsburgh | 3.65c. to 3.75c. |
| No. 24, f.o.b. Chicago dist. mill | 3.85c. |
| No. 24, del'd Cleveland | 3.84c. to 3.94c. |
| No. 24, del'd Philadelphia | 4.07c. |
| No. 24, f.o.b. Birmingham | 3.90c. |

*Tin Mill Black Plate*

| | |
|---|---|
| No. 28, f.o.b. Pittsburgh | 2.90c. to 3.00c. |
| No. 28, f.o.b. Chicago dist. mill | 3.00c. to 3.10c. |

*Automobile Body Sheets*

| | |
|---|---|
| No. 20, f.o.b. Pittsburgh | 4.00c. to 4.15c. |

*Long Ternes*

| | |
|---|---|
| No. 24, 8-lb. coating, f.o.b. mill primes | 4.10c. |

## Tin Plate

| | Per Base Box |
|---|---|
| Standard cokes, f.o.b. P'gh district mills | $5.25 |
| Standard cokes, f.o.b. Gary and Elwood, Ind. | 5.35 |

## Terne Plate

*(F.o.b. Morgantown or Pittsburgh)*

(Per package, 20 x 28 in.)

| | |
|---|---|
| 8-lb. coating I.C. | $11.20 |
| 15-lb. coating I.C. | 14.00 |
| 20-lb. coating I.C. | 15.30 |
| 25-lb. coating I.C. | $16.70 |
| 30-lb. coating I.C. | 17.75 |
| 40-lb. coating I.C. | 19.85 |

## Alloy Steel Bars

(F.o.b. Pittsburgh, Chicago or Ohio Mill)

| S. A. E. Series Numbers | | Base Per 100 Lb. |
|---|---|---|
| 2100* | (1½% Nickel, 0.10% to 0.20% Carbon) | $2.90 to $3.00 |
| 2300 | (3½% Nickel) | 4.00 to 4.10 |
| 2500 | (5% Nickel) | 5.00 to 5.25 |
| 3100 | (Nickel Chromium) | 3.00 to 3.10 |
| 3200 | (Nickel Chromium) | 4.75 to 5.00 |
| 3300 | (Nickel Chromium) | 6.75 to 7.00 |
| 3400 | (Nickel Chromium) | 6.00 to 6.25 |
| 5100 | (Chromium Steel) | 3.00 to 3.10 |
| 5200* | (Chromium Steel) | 7.00 to 7.50 |
| 6100 | (Chrom. Vanadium bars) | 4.00 to 4.15 |
| 6100 | (Chrom. Vanad. spring steel) | 3.50 to 3.75 |
| 9250 | (Silicon Manganese spring steel) | 3.00 to 3.15 |
| | Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.) | 4.10 to 4.20 |
| | Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.) | 4.05 to 4.20 |
| | Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.) | 4.00 to 4.25 |
| | Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.) | 3.05 to 3.10 |
| | Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum) | 4.50 to 4.75 |

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½ in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specification, but numbered by manufacturers to conform to S. A. E. system.

## Rails

| | Per Gross Ton |
|---|---|
| Standard, f.o.b. mill | $43.00 |
| Light (from billets), f.o.b. mill | 36.00 |
| Light (from rail steel), f.o.b. mill | 34.00 |
| Light (from billets), f.o.b. Ch'go mill | 36.00 |

## Track Equipment

| | Base Per 100 Lb. |
|---|---|
| Spikes, ⅝ in. and larger | $2.70 to $2.80 |
| Spikes, ½ in. and smaller | 2.70 to 2.80 |
| Spikes, boat and barge | 2.90 to 3.00 |
| Tie plates, steel | 2.25 |
| Angle, bars | 2.75 |
| Track bolts, to steam railroads | 3.80 to 4.00 |
| Track bolts, to jobbers, all sizes, per 100 count, | 70 per cent off list |

## Welded Pipe

**Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills**

*Butt Weld*

| Steel Inches | Steel Black | Steel Galv. | Iron Inches | Iron Black | Iron Galv. |
|---|---|---|---|---|---|
| ⅛ | 45 | 19½ | ⅛ to ¾ | +11 | +39 |
| ¼ to ⅜ | 51 | 25½ | ½ | 22 | 2 |
| ½ | 56 | 42½ | ¾ | 28 | 11 |
| ¾ | 60 | 48½ | 1 to 1½ | 30 | 13 |
| 1 to 3 | 62 | 50½ | | | |

*Lap Weld*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 55 | 43½ | 2 | 23 | 7 |
| 2½ to 6 | 59 | 47½ | 2½ | 26 | 11 |
| 7 and 8 | 56 | 43½ | 3 to 6 | 28 | 13 |
| 9 and 10 | 54 | 41½ | 7 to 12 | 26 | 11 |
| 11 and 12 | 53 | 40½ | | | |

*Butt Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ¼ | 41 | 24½ | ¼ to ⅜ | +19 | +54 |
| ½ to ⅝ | 47 | 30½ | ½ | 21 | 17 |
| ½ | 53 | 42½ | ¾ | 28 | 12 |
| ¾ | 58 | 47½ | 1 to 1½ | 30 | 14 |
| 1 to 1½ | 60 | 49½ | | | |
| 2 to 3 | 61 | 50½ | | | |

*Lap Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 53 | 42½ | 2 | 23 | 9 |
| 2½ to 4 | 57 | 46½ | 2½ to 4 | 29 | 15 |
| 4½ to 6 | 56 | 45½ | 4½ to 6 | 28 | 14 |
| 7 to 8 | 52 | 39½ | 7 to 8 | 21 | 15 |
| 9 and 10 | 45 | 32½ | 9 to 12 | 16 | 2 |
| 11 and 12 | 44 | 31½ | | | |

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5 and 2½%, and on galvanized by 1½ points, with supplementary discount of 5 and 2½%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

**Base Discounts, f.o.b. Pittsburgh**

| Lap Welded Steel | | Charcoal Iron | |
|---|---|---|---|
| 2 to 2½ in. | 27 | 1½ in. | +18 |
| 2½ to 2¾ in. | 37 | 1⅝ to 1¾ in. | + 8 |
| 3 in. | 40 | 2 to 2¼ in. | — 2 |
| 3¼ to 3¾ in. | 42½ | 2½ to 3 in. | — 7 |
| 4 to 13 in. | 46 | 3¼ to 4½ in. | — 9 |

Beyond the above discounts, 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

*Standard Commercial Seamless Boiler Tubes*

*Cold Drawn*

| | | | |
|---|---|---|---|
| 1 in. | 60 | 3 in. | 45 |
| 1¼ to 1½ in. | 52 | 3¼ to 3½ in. | 47 |
| 1⅝ in. | 36 | 4 in. | 50 |
| 2 to 2¼ in. | 31 | 4½, 5 and 6 in. | 45 |
| 2½ to 2¾ | 39 | | |

*Hot Rolled*

| | | | |
|---|---|---|---|
| 2 and 2¼ in. | 37 | 3¼ and 3½ in. | 53 |
| 2½ and 2¾ in. | 45 | 4 in. | 56 |
| 3 in. | 51 | 4½, 5 and 6 in. | 61 |

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

| | Per Cent Off List |
|---|---|
| Carbon, 0.10% to 0.30%, base | 55 |
| Carbon, 0.30% to 0.40%, base | 50 |

Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

**Tin Plate.**—Specifications for tin plate are sufficient to engage productive capacity to fully 80 per cent, a gain of 3 or 4 points from the average of a week ago. This is somewhat under the rate of a year ago, but can makers are not making up containers nearly as heavily in advance of orders as a year ago, and tin plate specifications are in keeping with that fact. Plans have been made for increased acreage in almost all packing crops regardless of this year's carryover, and efforts are to be made to increase consumption of canned foods through emphasis on the quality. The common expectation of tin plate manufacturers is that this year will see a production between that of 1926 and 1927, or, roughly, 37,500,000 base boxes.

**Cold-Finished Steel Bars and Shafting.**—Most manufacturers since a week ago have announced an advance of $2 a ton to 2.30c., base Pittsburgh or Chicago, to apply on new business for shipment between now and the end of this quarter. General coverage of buyers for this quarter at 2.20c. minimizes the possibility of much new business between now and March 31. Restriction of the new price to orders for shipment by that date is probably a safeguard against a further advance in hot-rolled bars. Specifying on first quarter contracts is steady and in good volume despite the fact that parts makers generally are not making up stocks of finished products in anticipation of orders.

**Hot-Rolled Flats.**—Specifications and shipments still show an expanding tendency and from that standpoint the situation is satisfactory. But the movement is against low-priced orders and consumers generally are so well covered that there is little new business. On new business mills generally want 1.90c. for wide stock and 2.10c., base, for material less than 6 in. wide. The Jones & Laughlin Steel Corporation has put out a new card on hoops and bands, the only change being the adoption of the quantity extras for lots of less than two tons, already in effect on bars and small shapes. For lots of less than 4000 lb., but not less than 2000 lb., there is a lump sum extra of $3; less than 2000 lb., but not less than 1000 lb., $6, and for lots of less than 1000 lb., $10.

**Bars, Plates and Shapes.**—Makers in this district are well satisfied with what buyers are specifying on first quarter bar contracts, which generally carried a price of 1.80c., base Pittsburgh. Business in bars, plates and shapes taken late last year at 1.75c., base, appears to be well cleaned up. On new business there is no evidence that less than 1.85c. is being done. Structural lettings are light in this area and neither in the shops nor the estimating departments are local fabricators as busy as they could be.

**Cold Rolled Strips.**—All makers now are quoting 3.15c., base Pittsburgh or Cleveland, subject to a deduction of 25c. per 100 lb. for lots of 3 tons or more of a size and temper for one shipment. Specifications on old and lower-priced contracts are still coming along well.

**Bolts, Nuts and Rivets.**—Demand for bolts and nuts is considerably better, notably from jobbers, than it was a few weeks ago, but still is no strain upon the ability of manufacturers to supply. Rivets are not yet showing much life. Prices of these products are firm.

**Fluorspar.**—Small lots of gravel spar for spot shipment are bringing $15 per net ton at mines, but all contracts of any consequence carry a price of $14.50 for domestic material. Foreign spar does not appear to be finding much use in this and nearby districts.

**Coke and Coal.**—It is impossible to report improvement in either prices or business. Furnace coke is plentiful in relation to demand and prices are largely dictated by buyers. Usable coke can be bought as low as $2.50 but pig iron producers who are exacting as to sulphur content of the coke cannot do much better than $2.60, while a little more is asked when only one or two cars are wanted. Foundry coke ranges from $3.75 to $5.10, but most of the business is nearer the lower limit. The coal market is very slow.

**Old Material.**—Not much change is noted in the market. A steel maker putting in a new open-hearth furnace for the first time was a buyer of a small lot of selected heavy melting steel and is reported to have paid $15.75 and $16. But dealers are seeking orders for railroad steel from other melters at $15.25, while on some short orders dealers continue to pick up fair-sized lots at $14.75 for delivery at one point. No sales of this grade into consumption are noted at under $15 and that is a fair appraisal of the consumer market. Blast furnace scrap still is easy. There is little life to the demand for any grade, but sales develop without much advance notice, since there is not the tendency of former years for consumers to buy well ahead of needs.

*Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:*

| | |
|---|---|
| **Basic Open-Hearth Furnace Grades:** | |
| Heavy melting steel | $14.75 to $15.25 |
| Scrap rails | 14.25 to 14.75 |
| Compressed sheet steel | 14.00 to 14.25 |
| Bundled sheets, sides and ends | 13.00 to 13.25 |
| Cast iron carwheels | 14.00 to 14.50 |
| Sheet bar crops, ordinary | 15.00 to 15.50 |
| Heavy breakable cast | 13.00 to 13.50 |
| No. 2 railroad wrought | 14.75 to 15.25 |
| Heavy steel axle turnings | 13.00 to 13.50 |
| Machine shop turnings | 10.50 to 11.00 |
| **Acid Open-Hearth Furnace Grades:** | |
| Railroad knuckles and couplers | 16.75 to 17.00 |
| Railroad coil and leaf springs | 16.75 to 17.00 |
| Rolled steel wheels | 16.75 to 17.00 |
| Low phosphorus billet and bloom ends | 18.50 to 19.00 |
| Low phosphorus, mill plate | 17.50 to 18.00 |
| Low phosphorus, light grade | 16.50 to 17.00 |
| Low phosphorus sheet bar crops | 17.50 to 18.00 |
| Heavy steel axle turnings | 13.00 to 13.50 |
| **Electric Furnace Grades:** | |
| Low phosphorus punchings | 16.50 to 17.00 |
| Heavy steel axle turnings | 13.00 to 13.50 |
| **Blast Furnace Grades:** | |
| Short shoveling steel turnings | 11.00 |
| Short mixed borings and turnings | 11.00 |
| Cast iron borings | 11.00 |
| No. 2 busheling | 10.00 to 10.25 |
| **Rolling Mill Grades:** | |
| Steel car axles | 18.00 to 19.00 |
| No. 1 railroad wrought | 11.00 to 11.50 |
| Sheet bar crops | 17.00 to 17.50 |
| **Cupola Grades:** | |
| No. 1 cast | 14.50 to 15.00 |
| Rails 3 ft. and under | 15.00 to 15.25 |
| **Malleable Grades:** | |
| Railroad | 14.75 to 15.25 |
| Industrial | 14.25 to 14.75 |
| Agricultural | 13.75 to 14.25 |

**Warehouse Prices, f.o.b. Pittsburgh**

| | Base per Lb. |
|---|---|
| Plates | 3.00c. |
| Structural shapes | 3.00c. |
| Soft steel bars and small shapes | 2.90c. |
| Reinforcing steel bars | 2.75c. |
| Cold-finished and screw stock— | |
| Rounds and hexagons | 3.60c. |
| Squares and flats | 4.10c. |
| Bands | 3.60c. |
| Hoops | 4.00c. to 4.50c. |
| Black sheets (No. 24 gage), 25 or more bundles | 3.65c. |
| Galvanized sheets (No. 24 gage), 25 or more bundles | 4.50c. |
| Blue annealed sheets (No. 10 gage), 25 or more sheets | 3.10c. |
| Galvanized corrugated sheets (No. 28 gage), per square | $4.39 |
| Spikes, large | 3.30c. to 3.40c. |
| Small | 3.80c. to 5.25c. |
| Boat | 3.80c. |
| Track bolts, all sizes, per 100 count, | 62½ per cent off list |
| Machine bolts, per 100 count | 62½ per cent off list |
| Carriage bolts, per 100 count | 62½ per cent off list |
| Nuts, all styles, per 100 count, | 62½ per cent off list |
| Large rivets, base per 100 lb | $3.50 |
| Wire, black soft annealed, base per 100 lb | $3.00 to 3.10 |
| Wire, galvanized soft, base per 100 lb | 3.00 to 3.10 |
| Common wire nails, per keg | 3.00 |
| Cement coated nails, per keg | 3.05 |

## Baldwin Steel Plant in Canada Taken Over By New Interest

TORONTO, ONT., Feb. 7.—Gordon F. Perry, president National Iron Corporation, Ltd., Toronto, on behalf of himself and a syndicate of British, Canadian and United States interests, has taken up the option he held on the plant and property of the Baldwin Canadian Steel Corporation, Toronto. Mr. Perry stated that he is not yet in a position to announce plans for the development which the syndicate has in mind, but he said in a short time a thriving industry will arise on the site of the now idle plant.

# Semi-Finished Steel, Raw Materials, Bolts and Rivets

## Mill Prices of Semi-Finished Steel

**F.o.b. Pittsburgh or Youngstown**

### Billets and Blooms

| | *Per Gross Ton* |
|---|---|
| Rerolling, 4-in. and over | $33.00 |
| Rerolling, under 4-in. to and including 1¾ in. | $33.50 to 34.00 |
| Forging, ordinary | 38.00 to 39.00 |
| Forging, guaranteed | 43.00 to 44.00 |

### Sheet Bars

| | *Per Gross Ton* |
|---|---|
| Open-hearth or Bessemer | $34.00 |

### Slabs

| | *Per Gross Ton* |
|---|---|
| 8 in. x 2 in. and larger | $33.00 |
| Smaller than 8 in. x 2 in. | 34.00 |

### Skelp

| | *Per Lb.* |
|---|---|
| Grooved | 1.85c. |
| Sheared | 1.85c. |
| Universal | 1.85c. |

### Wire Rods

| | *Per Gross Ton* |
|---|---|
| *Common soft, base | $42.00 to $44.00 |
| Screw stock | $5.00 per ton over base |
| Carbon 0.20% to 0.40% | 3.00 per ton over base |
| Carbon 0.41% to 0.55% | 5.00 per ton over base |
| Carbon 0.56% to 0.75% | 7.50 per ton over base |
| Carbon over 0.75% | 10.00 per ton over base |
| Acid | 15.00 per ton over base |

*Chicago mill base is $43 to $45. Cleveland mill base, $42 to $44.

## Prices of Raw Material

### Ores

*Lake Superior Ores, Delivered Lower Lake Ports*

| | *Per Gross Ton* |
|---|---|
| Old range Bessemer, 51.50% iron | $4.55 |
| Old range non-Bessemer, 51.50% iron | 4.40 |
| Mesabi Bessemer, 51.50% iron | 4.40 |
| Mesabi non-Bessemer, 51.50% iron | 4.25 |
| High phosphorus, 51.50% iron | 4.15 |

*Foreign Ore, c.i.f. Philadelphia or Baltimore*

| | *Per Unit* |
|---|---|
| Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria | 10.00c. |
| Iron ore, Swedish, average 66% iron, | 9.25c. to 9.50c. |
| Manganese ore, washed, 52% manganese, from the Caucasus | 39c. |
| Manganese ore, Brazilian, African or Indian, basis 50% | 38c. to 39c. |
| Tungsten ore, high grade, per unit, in 60% concentrates | $10.25 to $10.75 |

| | *Per Gross Ton* |
|---|---|
| Chrome ore, 45 to 50% $Cr_2O_3$, crude, c.i.f. Atlantic seaboard | $22.00 to $24.00 |

| | *Per Lb.* |
|---|---|
| Molybdenum ore, 85% concentrates of $MoS_2$, delivered | 50c. to 55c. |

### Coke

| | *Per Net Ton* |
|---|---|
| Furnace, f.o.b. Connellsville prompt | $2.60 to $2.75 |
| Foundry, f.o.b. Connellsville prompt | 3.75 to 4.50 |
| Foundry, by-products, Ch'go ovens | 9.00 |
| Foundry, by-product, New England, del'd | 11.50 |
| Foundry, by-product, Newark or Jersey City, delivered | 9.45 to 9.85 |
| Foundry, Birmingham | 5.00 |
| Foundry, by-product, St. Louis | 9.75 |

### Coal

| | *Per Net Ton* |
|---|---|
| Mine run steam coal, f.o.b. W. Pa. mines | $1.40 to $1.80 |
| Mine run coking coal, f.o.b. W. Pa. mines | 1.50 to 1.75 |
| Gas coal, ¾-in., f.o.b. Pa. mines | 2.00 to 2.10 |
| Mine run gas coal, f.o.b. Pa. mines | 1.75 to 1.90 |
| Steam slack, f.o.b. W. Pa. mines | 1.00 to 1.10 |
| Gas slack, f.o.b. W. Pa. mines | 1.10 to 1.20 |

### Ferromanganese

| | *Per Gross Ton* |
|---|---|
| Domestic, 80%, furnace or seab'd | $100.00 |
| Foreign, 80%, Atlantic or Gulf port, duty paid | 100.00 |

### Spiegeleisen

| | *Per Gross Ton Furnace* |
|---|---|
| Domestic, 19 to 21% | $31.00 to $32.00 |
| Domestic, 16 to 19% | 29.00 |

### Electric Ferrosilicon

| | *Per Gross Ton Delivered* |
|---|---|
| 50% | $83.50 to $88.50 |
| 75% | 130.00 to 140.00 |

| | *Per Gross Ton Furnace* | | *Per Gross Ton Furnace* |
|---|---|---|---|
| 10% | $35.00 | 12% | $39.00 |
| 11% | 37.00 | 14 to 16% | 45.00 |

### Bessemer Ferrosilicon

**F.o.b. Jackson County, Ohio, Furnace**

| | *Per Gross Ton* | | *Per Gross Ton* |
|---|---|---|---|
| 10% | $30.00 | 12% | $34.00 |
| 11% | 32.00 | | |

### Silvery Iron

**F.o.b. Jackson County, Ohio, Furnace**

| | *Per Gross Ton* | | *Per Gross Ton* |
|---|---|---|---|
| 6% | $23.00 | 10% | $28.00 |
| 7% | 24.00 | 11% | 30.00 |
| 8% | 25.00 | 12% | 32.00 |
| 9% | 26.00 | | |

### Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd ..... 92c. to 95c.
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads ..... 11.00c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace ..... $3.15 to $3.65
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads ..... $200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton ..... $91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton ..... $122.50

### Fluxes and Refractories

**Fluorspar**

| | *Per Net Ton* |
|---|---|
| Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines | $14.50 to $15.00 |
| No. 2 lump, Illinois and Kentucky mines | $20.00 |
| Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid | $16.00 |
| Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines | $32.50 |

**Fire Clay**

*Per 1000 f.o.b. Works*

| | First Quality | Second Quality |
|---|---|---|
| Pennsylvania | $43.00 to $46.00 | $35.00 to $38.00 |
| Maryland | 43.00 to 46.00 | 35.00 to 38.00 |
| New Jersey | 50.00 to 65.00 | |
| Ohio | 43.00 to 46.00 | 35.00 to 38.00 |
| Kentucky | 43.00 to 46.00 | 35.00 to 38.00 |
| Missouri | 43.00 to 46.00 | 35.00 to 38.00 |
| Illinois | 43.00 to 46.00 | 35.00 to 38.00 |
| Ground fire clay, per ton | 7.00 | |

**Silica Brick**

| | *Per 1000 f.o.b. Works* |
|---|---|
| Pennsylvania | $43.00 |
| Chicago | 52.00 |
| Birmingham | 50.00 |
| Silica clay, per ton | $8.50 to 10.00 |

**Magnesite Brick**

| | *Per Net Ton* |
|---|---|
| Standard sizes, f.o.b. Baltimore and Chester, Pa. | $65.00 |
| Grain magnesite, f.o.b. Baltimore and Chester, Pa. | 40.00 |

**Chrome Brick**

| | *Per Net Ton* |
|---|---|
| Standard size | $45.00 |

## Mill Prices of Bolts, Nuts, Rivets and Set Screws

### Bolts and Nuts

Per 100 Pieces

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

| | *Per Cent Off List* |
|---|---|
| †Machine bolts | 70 |
| †Carriage bolts | 70 |
| Lag bolts | 70 |
| Plow bolts, Nos. 1, 2, 3 and 7 heads | 70 |
| Hot-pressed nuts, blank or tapped, square | 70 |
| Hot-pressed nuts, blank or tapped, hexagons | 70 |
| C.p.c. and t. square or hex. nuts, blank or tapped | 70 |
| Washers* | 6.75c. to 6.50c. per lb. off list |

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled threads up to and including ⅝ in. x 6 in. take 10 per cent lower list prices.

### Bolts and Nuts

| | *Per Cent Off List* |
|---|---|
| Semi-finished hexagon nuts | 70 |
| Semi-finished hexagon castellated nuts, S.A.E. | 70 |
| Stove bolts in packages | 80, 10 and 5 |
| Stove bolts in bulk | 80, 10, 5 and 2½ |
| Tire bolts | 60, 5 and 5 |

Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55 to 60 per cent apply.

### Large Rivets

(½-In. and Larger)

| | *Base per 100 Lb.* |
|---|---|
| F.o.b. Pittsburgh or Cleveland | $2.75 |
| F.o.b. Chicago | 2.85 |

### Small Rivets

(7/16-In. and Smaller)

| | *Per Cent Off List* |
|---|---|
| F.o.b. Pittsburgh | 70, 10 and 5 |
| F.o.b. Cleveland | 70, 10 and 5 to 70 and 10 |
| F.o.b. Chicago | 70, 10, 10 and 5 to 70 and 10 |

### Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

| | *Per Cent Off List* |
|---|---|
| Milled cap screws | 80, 10 and 10 |
| Milled standard set screws, case hardened, | 80 and 10 |
| Milled headless set screws, cut thread | 80 |
| Upset hex. head cap screws, U.S.S. thread, | 85 and 5 |
| Upset hex. cap screws, S.A.E. thread | 85 and 5 |
| Upset set screws | 80, 10 and 10 |
| Milled studs | 70 and 5 |

# Chicago

## Ingot Output at 92 Per Cent—Sales Volume is Undiminished

CHICAGO, Feb. 7.—Ingot output in the Chicago district is conservatively estimated at 92 per cent of capacity. The Illinois Steel Co. has blown in a stack at Gary and one at South Chicago, making 20 active out of 27. For the district as a whole, eight furnaces have been lighted since the first of the year.

Sales volume is undiminished since a week ago, when purchases compared favorably with any seven-day period in the last two years. Deliveries on most products have been extended.

Not less than 45,000 tons of steel will be required by Western shops for cars purchased in the week. A Mid-Western railroad is asking for prices on 36 passenger and baggage cars and it may soon enter the market for freight equipment.

Bids have been taken on the Chicago Civic Opera Building and it is probable that the 18,000 tons of steel required will be purchased at an early date. The position of fabricators is strengthening because of recent contracting and the prospect that spring construction will be heavy. Building permits in Chicago in January were 15 per cent heavier than in the first month a year ago.

Active inquiry for oil storage tanks now totals 5000 tons of steel and several new projects are rapidly taking form. Small consumers of steel are feeling the pinch of extended deliveries and the quantity extras recently placed on bars and small shapes by local mills. The effect has been a noticeable increase in the average size of purchases.

**Pig Iron.**—Excluding the long term contracts placed at the beginning of the year, sales for first and second quarter delivery in the first seven days of the current month are only a shade less than the total for January. As an indication that foundrymen are looking to the future, it is estimated that two-fifths of recent purchases are for delivery up to March 31 and that three-fifths of the tonnage sold is for shipment in the second quarter. Furnace operations are steady but release orders are in excess of production, thus affording sellers an opportunity to reduce furnace stocks. Higher prices at St. Louis are broadening the Chicago territory and are adding stability to local quotations. Less is heard of options at $18, delivered, against possible shipments by boat in the spring. The melt in malleable foundries continues to grow.

*Prices per gross ton at Chicago:*

| | |
|---|---|
| Northern No. 2 foundry, sil. 1.75 to 2.25 | $18.50 |
| N'th'n No. 1 fdy., sil. 2.25 to 2.75 | 19.00 |
| Malleable, not over 2.25 sil. | 18.50 |
| High phosphorus | 18.50 |
| Lake Superior charcoal, averaging sil. 1.50 | 27.04 |
| Southern No. 2 fdy. (all rail) | 22.01 |
| Southern No. 2 (barge and rail) | 20.18 |
| Low phos., sil. 1 to 2 per cent, copper free | $28.50 to 29.00 |
| Silvery, sil. 8 per cent | 29.79 |
| Bessemer ferrosilicon, 14 to 15 per cent | 46.79 |

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

**Ferroalloys.**—Ferromanganese is quoted at $100, seaboard, or $107.56, delivered Chicago. The spiegeleisen market is quiet and prices are steady.

*Prices delivered Chicago:* 80 per cent ferromanganese, $107.56; 50 per cent ferrosilicon, $83.50 to $87.50; spiegeleisen, 19 to 21 per cent, $38.76 to $39.76.

**Plates.**—Financial arrangements appear to be holding in check a pipe line project requiring 130,000 tons of steel, which will extend from the Southwest as far north as Omaha. Orders for tankage materials are lacking this week but inquiry is enlarged to the extent of 3000 tons. The railroad equipment market is active. The St. Louis-San Francisco has placed 4000 freight cars requiring 45,000 tons of plates, shapes and bars, and the Rock Island is asking for prices on 36 passenger and baggage cars. The Chicago & Eastern Illinois inquiry for 500 cars is promising. The St. Paul will come into the market for rolling stock, but it is understood that formal inquiry will not be issued before April. The local plate market is active as indicated by deliveries of four to five weeks on the universal mill product and two to four weeks on sheared products. Less is heard of low competitive prices on business that emanates from the Southwest, and in the local market prices are firm at 1.95c. for large lots and at 2.05c. for small lots.

*Mill prices on plates per lb.:* 1.95c. to 2.05c., base, Chicago.

**Structural Material.**—Projects that are in the making and actual inquiry before the trade total close to 100,000 tons in the immediate Chicago territory, while at Milwaukee it is estimated by the trade that an additional 40,000 tons is in prospect. Bids have been submitted on 30,000 tons of building work in Chicago. The Civic Opera building will require 18,000 tons and the Sheridan Towers 4000 tons. Railroad needs in structural shapes are heavy but the pending list is growing more rapidly than awards are being made. More activity is noted among fabricators. It is doubtful if prices named by shops are much above the level of December, but with heavier backlogs it seems probable that an advance in prices, much talked of by fabricators, may go into effect. Building promoters are being hurried into the market by the advances in mill prices. Structural mills are heavily engaged and deliveries have been extended, the best available now being four weeks, while on some sizes six weeks is the best promise. Prices are firm at 1.95c. on large tonnages and at 2.05c. for small orders.

*Mill prices on plain material per lb.:* 1.95c. to 2.05c., base, Chicago.

**Rails and Track Supplies.**—A Western railroad has purchased 15,000 tons of standard-section rails. Counting new inquiry, there remains not less than 50,000 tons of rails still to be purchased in this district. Track accessory sales total 12,000 tons, and 15,000 tons is on inquiry. Railroads are ready to take heavier shipments of track supplies and mills have been speeded. Although rail purchases have dragged as compared to a year ago, the railroads have been more prompt in completing shipping schedules and mills today have better arranged rolling schedules than in any previous late winter delivery period. The light rail market is dull.

*Prices f.o.b. mill, per gross ton:* Standard-section open-hearth and Bessemer rails, $43; light rails, rolled from billets, $36. *Per Lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.25c.; angle bars, 2.75c.

**Bars.**—Soft steel bar sales are on a par with last week, making the second consecutive seven-day period which compares favorably in volume of business with any like period in two years. Agricultural machinery manufacturers are fully engaged and local producers report no check in output is apparent in the automobile trade. In fact, such March schedules as now have been made up by that industry indicate that shipments in the coming month may be heavier than in January or in February. Cold drawn bar producers are forwarding heavy specifications. Prices are firm at 1.95c. to 2.05c. The iron bar market is moderatley active and prices remain at 1.90c., Chicago. Quotations on alloy steel bars are showing greater strength as sellers find their order books well filled. Rail steel bar producers have light backlogs and they hesitate to disturb the market by keeping pace with advances in the prices of mild steel bars. Quotations remain at 1.80c., Chicago Heights mills. Hard steel bar requirements for concrete reinforcement are heavy and the movement of fence posts is fully up to seasonal expectations. Deliveries of these products are prompt.

*Mill prices per lb.:* Soft steel bars, 1.95c. to 2.05c., base, Chicago; common bar iron, 1.90c., base, Chicago; rail steel bars, 1.80c., base, Chicago Heights mill.

**Cast Iron Pipe.**—Reports are that a more strenuous effort will be made to advance prices, but in the light of recent sales market quotations can be based only on $26 to $28, Birmingham, on attractive tonnages and on $28.50 to $30 for the average run of small business. The delivery situation is clearing in that makers are now able to make prompt shipment of some small sizes and shipment in 20 days is being promised on the larger diameters. Detroit will open bids Feb. 10 on 2000 tons of 24-in. class C pipe. A number of old quotations such as the year's requirements for Conneaut, Ohio, and 100 tons for Portsmouth, Ohio, are still open. Spring-

field, Ill., has ordered 300 tons from the National Cast Iron Pipe Co. The Santa Fe placed two sizable orders but interest among the railroads has been lagging. Public utilities give indication that they will soon be shopping for early spring requirements.

*Prices per net ton, delivered Chicago:* Water pipe, 6-in. and over, $34.20 to $36.20; 4-in., $38.20 to $40.20; Class A and gas pipe, $4 extra.

**Sheets.**—Specifications are more liberal and mill schedules are made up for two weeks. In the last few days the flow of releases has been growing steadily. The Milwaukee mills have resumed operations. Although the improved demand for shipments is relatively widespread it is noticeable that the roofing trade and general manufacturing are more active now than other buyers. Business in the Northwest is spotty but improved. Fresh sales are in small volume at steady prices.

*Base prices per lb., delivered from mill in Chicago:* No. 24 black, 3.05c.; No. 24 galvanized, 3.90c.; No. 10 blue annealed, 2.25c. to 2.35c. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

**Reinforcing Steel.**—Orders for billet steel reinforcing bars out of Chicago warehouses are small in the aggregate. The bulk of recent reinforcing bar awards has been taken by the hard steel bar mills. Fresh inquiry is light, but old projects are active as weather conditions become more favorable to outdoor construction. Shop operations average about 40 per cent. Asking prices for billet steel reinforcing bars range from 2.35c. to 2.75c. and rail steel is going at 1.80c. to 1.85c., Chicago Heights mills.

**Cold Rolled Drawn Bars.**—Chicago prices have been advanced to 2.30c. New sales have not been in large volume and a real test of the market is yet to come, but sellers say they have withdrawn old quotations and are naming only the new prices. Producers in this district are well engaged.

**Wire Products.**—Orders for these commodities are in good volume and mill operations are being held at 65 per cent of capacity. Specifications from the manufacturing trade are expanding. Jobbers, who in January undertook to expand stocks, are finding the rate of turnover high and are reordering to keep pace with demands. Mill stocks are growing smaller but the assortment is still good. Nail shipments are steady and woven wire fencing is moving in good volume, especially to the Southwest. Little business is coming from the railroads. All local producers have put in effect the advance in prices announced last week. Order books are of fair size. Current sales can hardly be said to be in sufficient volume to afford a test of the market. Prices for wire and wire products are shown on page 431.

**Coke.**—All by-product coke ovens in this district are lighted. Shipments are steady and prices are well maintained at $9, local ovens, and at $9.50, delivered in the Chicago switching district.

**Bolts, Nuts and Rivets.**—Demand for small rivets is sharply upward and prices are stronger. Specifications for these commodities in January were fully 30 per cent heavier than in December and this increase is well sustained in the first days of February. Production averages a shade under 70 per cent of capacity.

**Warehouse Prices, f.o.b. Chicago**

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.10c. |
| Soft steel bars | 3.00c. |
| Reinforcing bars, billet steel | 2.35c. to 2.75c. |
| Cold-finished steel bars and shafting— | |
| Rounds and hexagons | 3.60c. |
| Flats and squares | 4.10c. |
| Bands | 3.65c. |
| Hoops | 4.15c. |
| Black sheets (No. 24) | 3.95c. |
| Galvanized sheets (No. 24) | 4.80c. |
| Blue annealed sheets (No. 10) | 3.50c. |
| Spikes, standard railroad | 3.55c. |
| Track bolts | 4.55c. |
| Rivets, structural | 3.60c. |
| Rivets, boiler | 3.60c. |
| | Per Cent Off List |
| Machine bolts | 60 |
| Carriage bolts | 60 |
| Coach or lag screws | 60 |
| Hot-pressed nuts, squares, tapped or blank | 60 |
| Hot-pressed nuts, hexagons, tapped or blank | 60 |
| No. 8 black annealed wire, per 100 lb. | $3.20 |
| Common wire nails, base per keg | 3.00 |
| Cement coated nails, base per keg | 2.90 |

**Old Material.**—The local scrap situation is rather mixed in its tendencies. Large sales of heavy melting steel made two weeks ago stiffened the market and it was then generally believed that after a short period of inactivity prices would advance. Insofar as bids for railroad lists and trading prices among dealers are concerned this is true, but it is now disclosed that two local mills have taken upward of 18,000 tons of heavy melting steel at $12.75 to $13 a gross ton, delivered. This is a shade under the prices paid by other consumers in the near past. Rejections are high by users, who insist on having strictly No. 1 material, and dealers fear that margins of profits may be wiped out. The position of sellers is made worse by the inactivity of local yards and the fact that consumers are entering more spiritedly into bidding on railroad lists. Railroad shipments are finding placement as soon as they appear on tracks. One steel mill that does not often enter the market is picking up odd lots of 1000 to 2000 tons of heavy melting steel.

*Prices delivered consumers' yards, Chicago:*

| | |
|---|---|
| *Per Gross Ton* | |
| Basic Open-Hearth Grades: | |
| Heavy melting steel | $12.50 to $13.00 |
| Shoveling steel | 12.50 to 13.00 |
| Frogs, switches and guards, cut apart, and miscellaneous rails | 14.25 to 14.75 |
| Hydraulic compressed sheets | 11.00 to 11.50 |
| Drop forge flashings | 9.75 to 10.25 |
| Forged, cast and rolled steel carwheels | 15.50 to 16.00 |
| Railroad tires, charging box size | 16.25 to 16.75 |
| Railroad leaf springs, cut apart | 16.25 to 16.75 |
| Acid Open-Hearth Grades: | |
| Steel couplers and knuckles | 14.50 to 15.00 |
| Coil springs | 16.50 to 17.00 |
| Electric Furnace Grades: | |
| Axle turnings | 13.00 to 13.50 |
| Low phosphorus punchings | 14.25 to 14.75 |
| Low phosphorus plate, 12 in. and under | 13.50 to 14.00 |
| Blast Furnace Grades: | |
| Axle turnings | 10.75 to 11.25 |
| Cast iron borings | 10.25 to 10.75 |
| Short shoveling turnings | 10.25 to 10.75 |
| Machine shop turnings | 7.50 to 8.00 |
| Rolling Mill Grades: | |
| Iron rails | 13.50 to 14.00 |
| Rerolling rails | 15.00 to 15.50 |
| Cupola Grades: | |
| Steel rails less than 3 ft | 15.25 to 15.75 |
| Angle bars, steel | 14.00 to 14.50 |
| Cast iron carwheels | 14.00 to 14.50 |
| Malleable Grades: | |
| Railroad | 13.75 to 14.25 |
| Agricultural | 12.50 to 13.00 |
| Miscellaneous: | |
| *Relaying rails, 56 to 60 lb | 23.00 to 25.00 |
| *Relaying rails, 65 lb. and heavier | 26.00 to 31.00 |
| *Per Net Ton* | |
| Rolling Mill Grades: | |
| Iron angle and splice bars | 14.00 to 14.50 |
| Iron arch bars and transoms | 18.75 to 19.25 |
| Iron car axles | 21.50 to 22.00 |
| Steel car axles | 16.00 to 16.50 |
| No. 1 railroad wrought | 11.00 to 11.50 |
| No. 2 railroad wrought | 11.00 to 11.50 |
| No. 1 busheling | 9.25 to 9.75 |
| No. 2 busheling | 4.25 to 4.75 |
| Locomotive tires, smooth | 12.50 to 13.00 |
| Pipes and flues | 8.00 to 8.50 |
| Cupola Grades: | |
| No. 1 machinery cast | 14.50 to 15.00 |
| No. 1 railroad cast | 13.50 to 14.00 |
| No. 1 agricultural cast | 13.50 to 14.00 |
| Stove plate | 11.75 to 12.25 |
| Grate bars | 11.50 to 12.00 |
| Brake shoes | 11.75 to 12.25 |

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

## Inland Steel Earnings Decline Slightly—Donner Profits Off Sharply

The Inland Steel Co., Chicago, had net profits in 1927 of $6,806,894, equivalent after all charges to $5.16 per share of common stock. This compares with $7,147,704 in 1926, equal to $5.45 a share earned on common. Decline in earnings was most pronounced in the last quarter of the past year, when the company earned $1,216,853, as compared with $2,113,185 in the corresponding quarter of 1926.

Earnings for 1927 of the Donner Steel Co., Inc., Buffalo, amounted to $372,194, compared with $736,608 in the previous year. This company's profits in the quarter just passed were slightly better than in the December quarter of the previous year, having amounted to $86,595 in 1927 and to $86,092 in 1926.

# New York

## Pig Iron Sales 20,000 Tons—Structural Inquiries 21,000 Tons

NEW YORK, Feb. 7.—Sales of pig iron in this territory in the past week exceeded 20,000 tons. With a few exceptions, buying is for specific needs rather than for speculative purposes. Melters have largely disposed of stocks carried over from last quarter, and in some cases are expanding operations. Moderate-sized purchases still predominate, although several large buyers have placed orders recently. The Central Foundry Co., New York, has closed for 5000 tons, of which 3000 tons is for delivery at its Dundalk, Md., plant and 2000 tons is for shipment to the Essex foundry at Newark, N. J. The Thatcher Co. has placed 2000 tons for its Garwood, N. J., plant and 1500 tons for its Newark, N. J., works. The Eastern Malleable Iron Co., Naugatuck, Conn., has placed 3000 tons of malleable, and W. P. Laytham, Passaic, N. J., has closed against his inquiry for 3000 to 5000 tons of high silicon iron. An inquiry from the Washburn Wire Co., Phillipsdale, R. I., for 5000 tons of basic is the largest pending tonnage. A considerable proportion of the iron recently bought is for delivery this quarter. Two inquiries in this territory for 2000 tons and 500 tons of foundry iron respectively call for second quarter shipment. Except for low prices made by an idle furnace in disposing of its remaining stocks, the trend is toward a firmer market. Most eastern Pennsylvania producers have advanced their quotations on foundry iron to $20, base furnace. Recent sales have been at $19.50 and less. Buffalo foundry iron is increasingly steady at $17, base furnace.

*Prices per gross ton, delivered New York district:*

| | |
|---|---|
| Buffalo No. 2 fdy., sil. 1.75 to 2.25 | $21.41 to $21.91 |
| East. Pa. No. 2 fdy., sil. 1.75 to 2.25 | 20.39 to 21.52 |
| East. Pa. No. 2 fdy., sil. 2.25 to 2.75 | 20.89 to 22.02 |
| East. Pa. No. 1X fdy., sil. 2.75 to 3.25 | 21.39 to 22.52 |

Freight rates: $4.91 from Buffalo, $1.39 to $2.52 from eastern Pennsylvania.

**Reinforcing Bars.**—Effective today, distributers have advanced prices $1 a ton, to 1.95c., Pittsburgh mill. Youngstown and New York warehouse prices have remained unchanged, although two $1 advances have been made in the mill price. Sizable bookings have not been numerous in the last week, but some distributers have taken a fair tonnage in small jobs. Another section of the subway on which the general contract is soon to be awarded will require 300 tons of bars.

**Finished Steel.**—Structural steel inquiry is the most important development of the week locally, the total in four projects being 21,000 tons, of which 11,000 tons is for subway work, 4000 tons for a New York State office building to be erected in Manhattan, 3500 tons for bridge in Queens and 2500 tons for a loft building in Manhattan. The Structural Steel Board of Trade of New York reported for its members a total of about 10,000 tons in structural steel awards for the week, of which the largest was 5000 tons for the Lefcourt Building at Fifth Avenue and Forty-third Street. Builders are apparently recognizing that recent price advances are a determined step by the mills to improve their recent unsatisfactory earnings, and as a consequence tonnage involved in important undertakings is being placed or is about to be placed against options at previous prices soon to expire. Eastern shape mills report a gain in tonnage booked. In the last week of January there were fairly good specifications against the quotas for that month, and with this tonnage coming in consumers have not been specifying as freely during the past week. Mills making plates, shapes and bars are now getting fairly well into the prices which became effective on first quarter contracts, as consumers have almost reached the end of the steel due them on specifications at former prices given to the mills on or before Dec. 31. The recent advance of $1 a ton for the remainder of this quarter has so far applied only to small lots from consumers who had no contract protection. The interest of consumers in the future course of prices is evidenced by a few inquiries for second quarter plate contracts, on which mills have preferred not to quote at this time. Makers of sheets are now uniformly quoting 2.90c. on black, 2.10c. on blue annealed and 3.75c. on galvanized, Pittsburgh base, but consumers are well covered and new buying is light. The same situation applies to hot and cold-rolled strip steel and wire products, on which price advances have recently been announced.

*Mill prices per lb., delivered New York:* Soft steel bars, 2.19c.; plates, 2.17½c.; structural shapes, 2.14½c.; bar iron, 2.14c.

**Warehouse Business.**—Effective Feb. 6, jobbers have advanced prices on cold-finished shafting and screw stock $2 per ton to 3.40c. per lb., base, for rounds and hexagons and to 3.90c. per lb., base, for flats and squares. Business is beginning to show some improvement, particularly in the movement from stock of

### Warehouse Prices, f.o.b. New York

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.34c. |
| Soft steel bars and small shapes | 3.24c. |
| Iron bars | 3.24c. |
| Iron bars, Swedish charcoal | 7.00c. to 7.25c. |
| Cold-finished shafting and screw stock— | |
| Rounds and hexagons | 3.40c. |
| Flats and squares | 3.90c. |
| Cold-rolled strip, soft and quarter hard | 6.00c. to 6.25c. |
| Hoops | 4.49c. |
| Bands | 3.99c. |
| Blue annealed sheets (No. 10 gage) | 3.84c. to 3.89c. |
| Long terne sheets (No. 24) | 5.80c. |
| Standard tool steel | 12.00c. |
| Wire, black annealed | 4.50c. |
| Wire, galvanized annealed | 5.15c. |
| Tire steel, 1½ x ½ in. and larger | 3.30c. |
| Smooth finish, 1 to 2½ x ¼ in. and larger | 3.65c. |
| Open-hearth spring steel, bases | 4.50c. to 7.00c. |
| Machine bolts, cut thread: | Per Cent Off List |
| ¾ x 6 in. and smaller | 55 to 60 |
| 1 x 30 in. and smaller | 50 to 50 and 10 |
| Carriage bolts, cut thread: | |
| ½ x 6 in. and smaller | 55 to 60 |
| ¾ x 20 in. and smaller | 50 to 50 and 10 |
| Coach screws: | |
| ½ x 6 in. and smaller | 55 to 60 |
| 1 x 16 in. and smaller | 50 to 50 and 10 |
| Boiler Tubes— | Per 100 Ft. |
| Lap welded steel, 2-in | $17.33 |
| Seamless steel, 2-in | 20.24 |
| Charcoal iron, 2-in | 25.00 |
| Charcoal iron, 4-in | 67.00 |

*Discounts on Welded Pipe*

| *Standard Steel*— | Black | Galv. |
|---|---|---|
| ⅛-in. butt | 46 | 29 |
| ¼-in. butt | 51 | 37 |
| 1-3-in. butt | 53 | 39 |
| 2½-6-in. lap | 48 | 35 |
| 7 and 8-in. lap | 44 | 17 |
| 11 and 12-in. lap | 37 | 12 |
| Wrought Iron— | | |
| ⅛-in. butt | 5 | +19 |
| ¼-in. butt | 11 | + 9 |
| 1-1½-in. butt | 14 | + 6 |
| 2-in. lap | 5 | +14 |
| 3-6-in. lap | 11 | + 6 |
| 7-12-in. lap | 3 | +16 |

*Tin Plate (14 x 20 in.)*

| | Prime | Seconds |
|---|---|---|
| Coke, 100 lb. base box | $6.45 | $6.20 |
| Charcoal, per box— | A | AAA |
| IC | $9.70 | $12.10 |
| IX | 12.00 | 14.25 |
| IXX | 13.90 | 16.00 |

*Terne Plate (14 x 20 in.)*

| | |
|---|---|
| IC—20-lb. coating | $10.00 to $11.00 |
| IC—30-lb. coating | 12.00 to 13.00 |
| IC—40-lb. coating | 13.75 to 14.25 |

*Sheets, Box Annealed—Black, C. R. One Pass*

| | Per Lb. |
|---|---|
| Nos. 18 to 20 | 3.80c. to 4.00c. |
| No. 22 | 3.95c. to 4.15c. |
| No. 24 | 4.00c. to 4.20c. |
| No. 26 | 4.10c. to 4.30c. |
| No. 28* | 4.25c. to 4.45c. |
| No. 30 | 4.50c. to 4.70c. |

*Sheets, Galvanized*

| | Per Lb. |
|---|---|
| No. 14 | 4.35c. |
| No. 16 | 4.45c. |
| No. 18 | 4.35c. to 4.60c. |
| No. 20 | 4.50c. to 4.75c. |
| No. 22 | 4.55c. to 4.80c. |
| No. 24 | 4.70c. to 4.95c. |
| No. 26 | 4.95c. to 5.20c. |
| No. 28* | 5.20c. to 5.45c. |
| No. 30 | 5.60c. to 5.85c. |

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

**structural material.** Black and galvanized sheets continue in moderate demand and prices are unchanged.

**Cast Iron Pipe.**—There is a fair volume of small tonnage purchasing by private companies, but municipal buying is small. The New Haven Water Co., New Haven, Conn., has closed on 2000 tons of pipe and Brockton, Mass., is reported to have closed for 225 tons of 6 and 8-in. water pipe with the United States Cast Iron Pipe & Foundry Co. The basis of $28 per ton, f.o.b. Birmingham, is being fairly well maintained by both Southern and Northern makers.

*Prices per net ton, delivered New York:* Water pipe 6-in. and larger, $37.25 to $38.25; 4-in. and 5-in., $42.25 to $43.25; 3-in., $52.25 to $53.25; Class A and gas pipe, $4 to $5 extra.

**Coke.**—Purchasing of both foundry and furnace grades is light, but curtailment of operations has enabled producers to maintain prices. Standard foundry is quoted for prompt shipment at $4 to $4.50 per ton, Connellsville, and standard furnace at from $2.75 to $3 per ton, Connellsville. Delivered prices are: To northern New Jersey, $8.03 to $8.53; to New York or Brooklyn, $8.79 to $9.29; to Newark or Jersey City, $7.91 to $8.41. By-product coke continues at $9 to $9.40 per net ton, delivered Newark or Jersey City.

**Old Material.**—Prices are unchanged in an inactive market. Purchasing by consumers is confined to small tonnages. Although prices show no tendency to advance, there are apparently no large supplies of most grades. No. 1 heavy melting steel is unchanged at $13.50 per ton, delivered eastern Pennsylvania. Yard grade is being purchased by brokers at $10.75 and $11 per ton, delivered Harrisburg, Phoenixville or Pottsville, Pa., and as high at $11.25 has been paid in some instances. The list of about 45,000 tons of scrap offered by the Pennsylvania Railroad is reported to have brought out slightly lower prices than were offered on the Pennsylvania list last month.

| | |
|---|---|
| No. 1 heavy melting steel | $10.00 to $10.85 |
| Heavy melting steel (yard) | 6.75 to 7.25 |
| No. 1 heavy breakable cast | 11.25 to 12.00 |
| Stove plate (steel works) | 8.75 to 9.00 |
| Locomotive grate bars | 8.75 to 9.00 |
| Machine shop turnings | 6.75 to 7.50 |
| Short shoveling turnings | 7.00 to 7.50 |
| Cast borings (blast furnace or steel works) | 6.75 to 7.50 |
| Mixed borings and turnings | 7.00 to 7.50 |
| Steel car axles | 16.00 to 16.50 |
| Iron car axles | 23.75 to 24.75 |
| Iron and steel pipe (1 in. diam., not under 2 ft. long) | 8.75 |
| Forge fire | 6.75 to 7.00 |
| No. 1 railroad wrought | 10.50 to 11.00 |
| No. 1 yard wrought, long | 9.00 to 9.50 |
| Rails for rolling | 10.50 to 11.00 |
| Cast iron carwheels | 11.25 to 11.75 |
| Stove plate (foundry) | 8.75 to 9.00 |
| Malleable cast (railroad) | 10.00 to 10.50 |
| Cast borings (chemical) | 11.00 to 11.50 |
| *Prices per gross ton, delivered local foundries:* | |
| No. 1 machinery cast | $13.75 to $14.25 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size | 11.75 to 12.25 |
| No. 2 cast (radiators, cast boilers, etc.) | 11.25 to 11.75 |

# Cleveland

## Heavier Steel Tonnages Coming from Automotive Industry

CLEVELAND, Feb. 7.—Specifications against contracts for practically all forms of finished steel are holding up in good volume. Heavy tonnages are coming from the automotive industry and other consuming industries are ordering material somewhat more freely than recently. While the output of the Ford Motor Co. is still rather limited, falling considerably short of 1000 cars per day, some of the other makers of low-priced automobiles are operating at maximum capacity.

New steel business is moderate owing to the fact that most consumers are under contract. However, quite a little new business is being placed in steel bars, plates and structural material at 1.85c., Pittsburgh, which is being firmly adhered to except by local bar mills that are using a 1.85c. Cleveland base for steel bars. Following the $3 a ton advance on cold rolled strip and auto body sheets, makers of cold rolled strip have made a similar advance on fender stock. Cold finished bars have been advanced $2 a ton to 2.35c., Cleveland. Not much change is looked for in the volume of sales before next month, when consumers will come into the market for the second quarter, and on this business mills may get the full benefit of the higher prices.

Inquiry in the building field is light. The Timken Roller Bearing Co., Canton, Ohio, has placed a contract for a factory extension, requiring 3000 tons of structural steel. The Strobel Steel Construction Co., Chicago, has taken a contract for the erection of 9000 tons of structural steel bridge work for the Cleveland Union Terminals Co. The fabricating contract for this placed recently did not include erection. Lake shipyards have an inquiry out for a small building requiring 1000 tons.

**Pig Iron.**—Sales increased in the past week, during which Cleveland interests took orders for 34,000 tons, a gain of 10,000 tons over the previous week. The business was well scattered and for the most part was in small lots. Sales were rather evenly divided between early shipment orders, contracts for the second quarter and contracts to carry buyers through the remainder of this and the second quarter. The latter list is made up mostly of foundries that had carried over fourth quarter iron and had not previously made any purchases for this year's delivery. Buying interest developed in the northern Ohio territory, which has been quiet for some time. February shipments are starting out well and promise to equal in volume those of January. Although heavy shipments, particularly to the automotive industry, enabled some furnaces to reduce their stocks considerably last month, others are shipping only about as much iron as they are making and still have fairly large stocks that were accumulated in the late months of last year. Jobbing foundries report a slight gain in business. Pig iron prices show no change. Lake furnaces are able to sell foundry and malleable iron at $17 in the northern Ohio territory, but local furnaces must go to $16.50 to overcome the freight disadvantage for shipment to some competitive points. For Michigan delivery there is still a range of from $17.50 to $18. Low phosphorus iron is inactive. While a Valley producer has taken considerable business at $27, furnace, this price has to be shaded 50c. a ton when competition with Eastern furnaces must be met.

*Prices per gross ton at Cleveland:*

| | |
|---|---|
| N'th'n No. 2 fdy., sil. 1.75 to 2.25 | $18.50 |
| Southern fdy., sil. 1.75 to 2.25 | 22.00 |
| Malleable | 18.50 |
| Ohio silvery, 8 per cent | 28.00 |
| Basic, Valley furnace | 17.00 |
| Standard low phos., Valley furnace | $26.50 to 27.00 |

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; $3 from Jackson, Ohio; $6 from Birmingham.

**Sheets.**—The market has a firmer tone and prices below 2.90c., Pittsburgh, on black and 2.10c. on blue annealed sheets seem to have disappeared. While new business is only moderate, as most buyers are under contract, mills are taking some fair-sized lots of finished black sheets at the full price. Galvanized sheets are still irregular, some mills going to 3.75c., Valley, or 3.65c., Pittsburgh. Mills generally have joined in the advance to 4.15c. on auto body sheets. Specifications are heavy from the automotive industry and fair from most other consumers. The steel barrel industry is slack and little business is coming from that source.

**Strip Steel.**—Makers of cold rolled strip have advanced fender stock $3 a ton to 4.30c., Cleveland and Pittsburgh, for the remainder of this quarter for No. 20 gage and heavier. Cold-rolled strip is being quite

**Warehouse Prices, f.o.b. Cleveland**

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.00c. |
| Soft steel bars | 3.00c. |
| Reinforcing steel bars | 2.25c. to 2.75c. |
| Cold-finished rounds and hexagons | 3.65c. |
| Cold-finished flats and squares | 4.15c. |
| Hoops and bands | 3.65c. |
| Cold-finished strip | *5.95c. |
| Black sheets (No. 24) | 3.75c. |
| Galvanized sheets (No. 24) | 4.60c. |
| Blue annealed sheets (No. 10) | 3.25c. |
| No. 9 annealed wire, per 100 lb | $2.90 |
| No. 9 galvanized wire, per 100 lb | 3.35 |
| Common wire nails, base per keg | 2.90 |

*Net base, including boxing and cutting to length.

generally quoted at a 3.15c. Cleveland base or 2.90c. for 3 tons and over. Hot-rolled strip is firm at 1.85c., Pittsburgh, for wide and at 2.05c. for narrow material. Specifications against contracts are good, but new business is light.

**Reinforcing Bars.**—The Cleveland Union Terminals Co. has a new inquiry out for 1000 tons for foundation work, which with 2000 tons reported last week and tunnel work still pending, makes a total of 4600 tons to be placed. Makers of rail steel bars have marked up their price $2 a ton to 1.75c., mill. Billet steel reinforcing bars are generally quoted at 1.85c., Cleveland. Good lots from warehouses are going at around 2.25c.

**Warehouse Business.**—Jobbers have advanced galvanized sheets $2 a ton to 4.60c. but have not changed other grades. Warehouse orders are fair, showing a gain over January and the average size of orders is larger. Prices are firm.

**Iron Ore.**—Consumers are as yet showing no interest in Lake Superior ore for 1928 delivery, and there has been no discussion of prices. Prices may not be named before April and it is doubted whether the ore buying movement will start before that time. There is nothing to indicate that there will be a change from the prices that have prevailed the past two years.

**Semi-Finished Steel.**—Specifications for sheet bars are not holding up to recent volume, as some of the sheet mills report that they do not have orders to keep them operating at the rate at which they were running last month. The leading local producer has shut down one open-hearth furnace, now operating nine out of 14. Prices are unchanged at $33, Cleveland, for sheet bars, billets and slabs.

**Coke.**—Foundry coke is in better demand than recently, reflecting some improvement in foundry operations. By-product foundry coke is quoted at $8, Painesville, for February shipment, or $9.01, delivered Cleveland. Connellsville quotations are $3.75 to $5.10, ovens, for foundry grades and $2.75 for heating coke. By-product coke for domestic use is moving slowly and unchanged at $4.50, Valley ovens, for egg size.

**Bolts, Nuts and Rivets.**—The demand for bolts and nuts is slowly expanding. Specifications during January showed a gain over December, but were not as heavy as during January last year. The industry has increased operations and is now running at from 60 to 65 per cent of capacity. Rivet orders are rather light. Prices on these products are firm.

**Old Material.**—Mills are not taking as much scrap as recently, several finding it necessary to restrict shipments which were coming in faster than needed. A Warren, Ohio, mill has stopped shipments entirely. There is no new demand from consumers and dealers are buying very little scrap. The holding up of shipments is having a depressing effect on the market, although prices are no lower. Dealers are making small-lot purchases, paying $14 for No. 1 heavy melting steel and $10.50 for blast furnace scrap.

*Prices per gross ton, delivered consumers' yards:*

| | |
|---|---|
| **Basic Open-Hearth Grades** | |
| No. 1 heavy melting steel | $13.75 to $14.00 |
| No. 2 heavy melting steel | 13.25 to 13.50 |
| Compressed sheet steel | 12.75 to 13.00 |
| Light bundled sheet stampings | 11.50 to 11.75 |
| Drop forge flashings | 12.50 to 13.00 |
| Machine shop turnings | 9.00 to 9.25 |
| No. 1 railroad wrought | 11.50 to 12.00 |
| No. 2 railroad wrought | 13.50 to 14.00 |
| No. 1 busheling | 11.00 to 11.25 |
| Pipes and flues | 9.00 to 9.50 |
| Steel axle turnings | 12.50 to 13.00 |
| **Acid Open-Hearth Grades** | |
| Low phosphorus forging crops | 16.50 to 17.00 |
| Low phosphorus, billet, bloom and slab crops | 17.00 to 17.50 |
| Low phosphorus sheet bar crops | 16.50 to 17.00 |
| Low phosphorus plate scrap | 16.00 to 16.50 |
| **Blast Furnace Grades** | |
| Cast iron borings | 10.50 to 10.75 |
| Mixed borings and short turnings | 10.50 to 10.75 |
| No. 2 busheling | 10.50 to 10.75 |
| **Cupola Grades** | |
| No. 1 cast | 16.50 to 17.00 |
| Railroad grate bars | 11.00 to 12.00 |
| Stove plate | 12.00 to 12.50 |
| Rails under 3 ft. | 18.00 to 18.50 |
| **Miscellaneous** | |
| Railroad malleable | 15.00 to 15.50 |
| Rails for rolling | 16.25 to 16.50 |

# Philadelphia

## Foundry Iron Advanced to $20 Per Ton; Sales in Week of 60,000 Tons

PHILADELPHIA, Feb. 7.—Purchases of several sizable tonnages of pig iron brought the total closed in this district in the week to 60,000 tons or more. Eastern Pennsylvania pig iron producers have advanced prices of foundry grades to $20 per ton, base furnace, and in some cases quotations at $19.50 were withdrawn. Included in pig iron sales were 20,000 to 25,000 tons of basic and a large tonnage of foundry iron for a cast iron pipe interest.

Sales of plates, shapes and bars are in most cases small as consumers are well covered by contracts, but the recent advances are being firmly maintained on new business. Among plate mills there is some discussion of the advisability of adopting quantity differentials. Sizable plate tonnage has been booked by eastern Pennsylvania mills from fabricators who were awarded contracts for oil tanks and stills for the Sinclair Oil Co.

**Pig Iron.**—Effective last week, eastern Pennsylvania furnaces advanced prices 50c. a ton on foundry grades to a basis of $20 per ton, base furnace. Prior to the advance, a large tonnage of outstanding business was closed at the former quotations. It is estimated that more than 60,000 tons of foundry and basic iron was purchased in this district during the week. Included in this total was more than 20,000 tons of foundry grades purchased by the leading cast iron pipe interest, 5000 tons of foundry iron by the Central Foundry Co. and 20,000 to 25,000 tons of basic iron by an Eastern plate manufacturer. A Delaware River pipe maker is in the market for a medium-sized tonnage of foundry iron and another eastern Pennsylvania consumer of basic iron is reported to be considering purchase of a tonnage soon. The past week's basic business is understood to have figured back to about $19, furnace. There has been some small business in low phosphorus iron, steel foundries working on orders from the railroads being particularly active. There have been some carload lots of foundry iron closed on the new basis of $20 per ton, furnace, but no substantial tonnage has been placed at this price.

*Prices per gross ton at Philadelphia:*

| | |
|---|---|
| East. Pa. No. 2 plain, 1.75 to 2.25 sil. | $20.26 to $20.76 |
| East. Pa. No. 2X, 2.25 to 2.75 sil. | 20.76 to 21.26 |
| East. Pa. No. 1X | 21.26 to 21.76 |
| Basic (delivered eastern Pa.) | $19.50 to 20.00 |
| Gray forge | 19.75 to 20.25 |
| Malleable | 21.00 to 21.50 |
| Standard low phos. (f.o.b. New York State furnace) | 23.00 to 24.00 |
| Copper bearing low phos. (f.o.b. furnace) | 23.50 to 24.00 |
| Virginia No. 2 plain, 1.75 to 2.25 sil. | 24.54 to 25.04 |
| Virginia No. 2X, 2.25 to 2.75 sil. | 25.04 to 25.54 |

Prices, except as specified otherwise, are delivered Philadelphia. Freight rates: 76c. to $1.64 from eastern Pennsylvania furnaces; $4.54 from Virginia furnaces.

**Billets.**—Quotations on steel billets continue unchanged at $33 per ton, Pittsburgh, for rerolling quality and $38 per ton, Pittsburgh, for forging billets.

**Bars.**—Current purchasing is small, but specifications against contracts are coming out freely and mills are beginning to consider the possibility of a further advance for second quarter business. The present basis of 1.85c. per lb., base, Pittsburgh, or 2.17c. per lb., delivered Philadelphia, is evidently being well maintained.

**Shapes.**—Prices are showing slightly less irregularity, so that 2c. per lb., Bethlehem, and 1.97½c. per lb., Pottsville, or 2.12c. to 2.13c. per lb., delivered Philadelphia, are representative of the present market. Award of contracts for barges and car floats by the Pennsylvania and New York Central railroads has been postponed. In a few instances recently, local fabricated projects have been revised to reinforced concrete. An outstanding revision is the Blum Store addition, originally 1200 tons of structural steel and now only 150 tons of column cores and girders.

**Plates.**—Eastern Pennsylvania mills have booked some substantial tonnage from fabricators of oil tanks and stills for the Sinclair Oil Co. A Chattanooga,

Tenn., fabricator awarded about 2500 tons of plates to a Claymont, Del., mill and a Louisville, Ky., contractor has placed 1000 to 1200 tons with another eastern Pennsylvania producer. Quotations continue unchanged at 2c. per lb., Coatesville, or 2.10c. per lb., delivered Philadelphia.

**Sheets.**—Blue annealed sheet prices are fairly well maintained at 2.10c. per lb., base, with a 10c. per 100 lb. extra for widths greater than 40 in. Black and galvanized sheet prices, however, still show a tendency to softness with black sheets ranging from 2.70c. to 2.90c. per lb., Pittsburgh, and galvanized from 3.65c. to 3.75c. per lb., Pittsburgh.

**Warehouse Business.**—Purchasing from stock continues small, but prices are being fairly well maintained with only occasional concessions. Effective Feb. 6, prices on cold finished steel were advanced $2 per ton to 3.35c. per lb., base, for rounds and hexagons and 3.85c. per lb., base, for flats and squares.

**Imports.**—In the week ended Feb. 4, the only iron or steel shipment received at this port was 23 tons of steel billets from Sweden.

**Old Material.**—Prices are unchanged and the market is quiet. Dealers report all grades moving in fair volume, although there is no great surplus of scrap available. Consumers are reported to be showing less inclination to suspend shipments.

*Prices per gross ton delivered consumers' yards, Philadelphia district:*

| | |
|---|---|
| No. 1 heavy melting steel | $13.50 to $14.00 |
| Scrap T rails | 13.00 to 13.50 |
| No. 2 heavy melting steel | 11.00 to 11.50 |
| No. 1 railroad wrought | 15.25 to 15.75 |
| Bundled sheets (for steel works) | 10.50 to 11.00 |
| Machine shop turnings (for steel works) | 11.00 |
| Heavy axle turnings (or equivalent) | 12.00 to 12.50 |
| Cast boring (for steel works and rolling mill) | 11.00 |
| Heavy breakable cast (for steel works) | 15.50 to 16.00 |
| Railroad grate bars | 13.00 |
| Stove plate (for steel works) | 13.00 |
| No. 1 low phos., heavy, 0.04 per cent and under | 18.00 to 18.50 |
| Couplers and knuckles | 16.00 to 16.50 |
| Rolled steel wheels | 15.50 to 16.00 |
| No. 1 blast furnace scrap | 10.00 to 10.50 |
| Machine shop turnings (for rolling mill) | 11.00 to 11.50 |
| Wrought iron and soft steel pipes and tubes (new specifications) | 13.00 to 13.50 |
| Shafting | 17.50 to 18.00 |
| Steel axles | 19.00 to 20.00 |
| No. 1 forge fire | 11.00 to 12.00 |
| Steel rails for rolling | 15.00 to 15.50 |
| Cast iron carwheels | 15.50 to 16.50 |
| No. 1 cast | 16.00 to 16.50 |
| Cast borings (for chemical plant) | 15.00 to 15.50 |

## Milwaukee Company Saves 784 Hours by Use of Air Mail

The Kearney & Trecker Corporation, Milwaukee, machine tool manufacturer, has been making a practical test of the advantages of air mail, with the result that in one week's time, a net gain of 784 hours over the regular mail was made. The test was made between Milwaukee and Detroit, Cleveland, Syracuse, N. Y., Philadelphia, New York, San Francisco and Los Angeles representatives of the company. A regular letter and an air mail letter were dispatched to each city daily and a tally was kept on the time of arrival. In only one instance, that to Cleveland, did a letter sent through regular channels beat the air mail letter. One letter to Syracuse and another to Philadelphia arrived at the same time. The investment of $3.50 in air mail postage is balanced by the 784 hr. saved, according to George L. Erwin, Jr., sales manager, who conducted the test.

---

Production of machinery in Canada in 1926, excluding household and office equipment, was valued at $29,563,000, an increase of 31 per cent over the output value of 1925, and close to the production record established in 1920, according to industrial census statistics recently issued by the Canadian Government, says a report of the Industrial Machinery Division, Department of Commerce. Returns were received from 156 machinery manufacturers.

## Wyckoff Drawn Steel Co. Acquires Chicago Plant

The Wyckoff Drawn Steel Co., Pittsburgh, with plant at Ambridge, Pa., has substantially added to its productive capacity in the manufacture of cold-finished steel bars and shafting and also has entered the Chicago district through its acquisition of the Fitzsimons Steel & Iron Co., Chicago. The Fitzsimons company started business 25 years ago at Milwaukee, moving to Chicago about three years ago and building the plant which now becomes the Chicago works of the Wyckoff company. The latter was organized in 1919 and produced its first steel early in 1920.

E. C. Rock, recently Cleveland district manager of the Wyckoff company, has been appointed Chicago district manager in charge of both sales and the operation of the plant, while Joseph Mahan, assistant superintendent at Ambridge, goes to Chicago in a similar capacity. George A. Neesham has been appointed assistant treasurer and transferred from Pittsburgh to Chicago and Herman J. Laurent, who has been in the Pittsburgh office, has been appointed office manager of the Chicago branch.

A. A. Bialis, who has been special representative of the Wyckoff company in Pittsburgh, has been named general manager of sales. A. W. Wyckoff is president of the company; William McConway and Joseph T. Somers are vice-presidents, the latter in charge of sales; D. C. Dodds is secretary-treasurer, and they with William Metcalf, Jr., comprise the board of directors.

---

## Bethlehem Offers Preferred Stock to Employees at $120 a Share

The Bethlehem Steel Corporation has announced its 1928 offering of preferred stock to employees under the terms of the company's employees' saving and stock ownership plan. In commenting upon the offering Eugene G. Grace, president, stated that since the plan was inaugurated four years ago 30,000 employees have invested more than $11,000,000 in the corporation's stock and $2,000,000 in dividends has been paid or credited to them. Special benefit payments amounting to $530,000 have also been made or credited to the workers.

Employees who subscribe for shares may pay for them either in cash or in monthly, semi-monthly or weekly installments extending over 27 months. During this period they will be credited with all dividends declared. In addition, special benefit payments amounting to $15 per share will be made to employee stockholders who hold their stock for a period of five years and remain in the employ of the corporation. The price this year will be $120 per share, compared with $107 in 1927.

---

## American Sales Agents for British Ferromanganese Appointed

Sales representation in the United States for British producers of ferromanganese is now in the hands of two companies: Rogers Brown & Crocker Brothers, Inc., New York, and Frank Samuel & Co., Philadelphia.

Rogers Brown & Crocker Brothers, Inc., has become the agent of an organization recently created in England, known as the United Kingdom Ferromanganese Co. This is made up of the following companies: Darwen & Mostyn Iron Co., Ltd., Wigan Coal & Iron Co., Ltd., Dorman, Long & Co., Ltd., and the United Steel Companies, Ltd.

Frank Samuel & Co. have been made the agents of the two other principal British ferromanganese producers: The Linthorpe Dinsdale Smelting Co., Ltd., and Bolckow Vaughan & Co., Ltd.

---

Production of beehive coke in the United States in January is estimated by the Bureau of Mines at 373,000 net tons in 26 working days. This is about 1 per cent under December, and is less than half the output of January, 1927, which was 787,000 tons. All three months had the same number of working days.

# Canada

## Business Making Progress—Pig Iron Gaining Strength

TORONTO, ONT., Feb. 7.—Business as a whole is making progress. Following an order placed by the Canadian Pacific for $2,000,000 to $3,000,000 worth of rolling stock, it is now reported that the Canadian National Railways will be in the market shortly for 200 cars. Business placed by Canadian railroads for rolling stock, etc., this year is several million dollars less than orders of a year ago.

**Pig Iron.**—Current demand is confined almost entirely to orders for 50 to 500 tons for early delivery. Forward buying is not a feature of the market, but shipping orders against contracts have resulted in a big movement of iron to consumers. Prices are gaining strength in Toronto and Montreal districts, but no revision has been made.

*Prices per gross ton:*

| | |
|---|---|
| Delivered Toronto | |
| No. 1 foundry, sil. 2.25 to 2.75 | $23.60 |
| No. 2 foundry, sil. 1.75 to 2.25 | 23.60 |
| Malleable | 23.60 |
| Delivered Montreal | |
| No. 1 foundry, sil. 2.25 to 2.75 | 25.00 |
| No. 2 foundry, sil. 1.75 to 2.25 | 25.00 |
| Malleable | 25.00 |
| Basic | 24.00 |
| Imported Iron at Montreal Warehouse | |
| Summerlee | 33.50 |
| Carron | 33.00 |

**Old Material.**—Dealers have failed to make further revision in prices, although the market continues weak. Sales are largely confined to a few special grades.

*Dealers' buying prices:*

| | Toronto | Montreal |
|---|---|---|
| *Per Gross Ton* | | |
| Heavy melting steel | $9.00 | $8.00 |
| Rails, scrap | 10.00 | 10.00 |
| No. 1 wrought | 9.00 | 11.00 |
| Machine shop turnings | 7.00 | 6.00 |
| Boiler plate | 7.00 | 7.00 |
| Heavy axle turnings | 7.50 | 7.50 |
| Cast borings | 7.50 | 6.00 |
| Steel turnings | 7.00 | 6.50 |
| Wrought pipe | 5.00 | 6.00 |
| Steel axles | 14.00 | 19.00 |
| Axles, wrought iron | 16.00 | 21.00 |
| No. 1 machinery cast | .... | 16.00 |
| Stove plate | .... | 12.00 |
| Standard carwheels | .... | 14.50 |
| Malleable | .... | 13.00 |
| *Per Net Ton* | | |
| No. 1 machinery cast | 15.00 | .... |
| Stove plate | 9.00 | .... |
| Standard carwheels | 13.00 | .... |
| Malleable scrap | 13.00 | .... |

# Birmingham

## Steel Demand Satisfactory—Southern Places 15,750 Tons of Rails

BIRMINGHAM, Feb. 7.—New pig iron tonnage is not large and the market is moving along quietly, except for daily small-lot sales. Quotations for foundry iron remain on a $16 base. Most melters have covered their requirements for February, while some have bought through March. The Sloss-Sheffield Steel & Iron Co. has blown out its city furnace No. 1 preparatory to rebuilding and enlarging. This work will duplicate city furnace No. 2, which included all of the Dovel improvements and increased production to 400 tons. Shipments of foundry iron have been growing larger since the middle of January and now are close to production. There was a considerable increase in yard stocks during January because of the small shipments in the first two weeks.

*Prices per gross ton, f.o.b. Birmingham district furnaces:*

| | |
|---|---|
| No. 2 foundry, 1.75 to 2.25 sil | $16.00 |
| No. 1 foundry, 2.25 to 2.75 sil | 16.50 |
| Basic | 15.00 |

**Finished Steel.**—Demand continues satisfactory and new business is developing at an even rate. No further changes have been made in prices. The Tennessee Coal, Iron & Railroad Co. is adding two new stands of finishing rolls to the Fairfield sheet mill, a continuous reheating furnace is to be built at the Fairfield structural mill and an additional row of soaking pits will be installed at the Fairfield blooming mill. The Tennessee company has received an additional order from the Southern Railway for 15,750 tons of rails. The Central of Georgia Railroad placed an order for 500 steel gondola cars and 50 flat cars. Several orders for 100 tons or more of structural steel and reinforcing bars were reported last week. The Ingalls Iron Works Co. will furnish the structural steel for the new 14-story office building of the Protective Life Insurance Co. in Birmingham, which will require about 350 tons. Open-hearth operations continue the same as for the past two weeks, the Gulf States Steel Co. operating four and the Tennessee company 12 to 13.

**Cast Iron Pipe.**—Small orders are coming in at a fair rate but nearly all of the larger business expected this quarter remains in abeyance. Bids were opened in Atlanta on Feb. 3 for about 700 tons but award was not made at the time. Several small awards from Mississippi towns are pending. Plant operations remain unchanged.

**Coke.**—Shipments are increasing and the market outlook is improving. Coke business is now between 30 and 40 per cent better than late November and December. No change has been made in the price, $5.

**Old Material.**—Shipments are about the same as for some time. Inquiries have increased but very little additional business is being obtained.

*Prices per gross ton, delivered Birmingham district consumers' yards:*

| | |
|---|---|
| Heavy melting steel | $9.50 to $10.00 |
| Scrap steel rails | 11.00 to 11.50 |
| Short shoveling turnings | 8.00 to 8.50 |
| Cast iron borings | 8.00 to 8.50 |
| Stove plate | 13.00 to 14.00 |
| Steel axles | 19.00 to 20.00 |
| Iron axles | 20.00 to 21.00 |
| No. 1 railroad wrought | 10.00 to 10.50 |
| Rails for rolling | 13.00 |
| No. 1 cast | 15.00 |
| Tramcar wheels | 12.50 to 13.50 |
| Cast iron carwheels | 12.00 to 13.00 |
| Cast iron borings, chemical | 13.50 to 14.00 |

# St. Louis

## Pig Iron Sales Exceed 5,000 Tons—3,000 Tons of Bars in New Project

ST. LOUIS, Feb. 7.—Sales of pig iron by the Granite City maker during the week amounted to between 5000 and 6000 tons of foundry grades and 150 tons of malleable, mostly for shipment during first quarter. A leading Southern interest sold 500 tons. The iron was sold in scattered lots to Illinois, Iowa and Missouri melters. Shipping specifications are satisfactory. An increased melt is reported by the steel mills, jobbing foundries and stove plants. The market is firm.

*Prices per gross ton at St. Louis:*

| | |
|---|---|
| No. 2 fdy., sil. 1.75 to 2.25 f.o.b. Granite City, Ill. | $19.50 to $20.00 |
| Northern No. 2 fdy., delivered St. Louis | 20.66 |
| Southern No. 2 fdy., delivered | 20.42 |
| Northern malleable, delivered | 20.66 |
| Northern basic, delivered | 20.66 |

Freight rates: 81c. from Granite City to St. Louis; $2.16 from Chicago; $4.42 from Birmingham.

### Warehouse Prices, f.o.b. St. Louis

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.25c. |
| Bars, soft steel or iron | 3.15c. |
| Cold-finished rounds, shafting and screw stock | 3.75c. |
| Black sheets (No. 24) | 4.45c. |
| Galvanized sheets (No. 24) | 5.25c. |
| Blue annealed sheets (No. 10) | 3.60c. |
| Black corrugated sheets (No. 24) | 4.50c. |
| Galvanized corrugated sheets | 5.30c. |
| Structural rivets | 3.75c. |
| Boiler rivets | 3.75c. |
| | Per Cent Off List |
| Tank rivets, ⅞-in. and smaller, 100 lb. or more | 70 |
| Less than 100 lb | 65 |
| Machine bolts | 60 |
| Carriage bolts | 60 |
| Lag screws | 60 |
| Hot-pressed nuts, square, blank or tapped, 200 lb. or more | 60 |
| Less than 200 lb | 50 |
| Hot-pressed nuts, hexagons, blank or tapped, 200 lb. or more | 60 |
| Less than 200 lb | 50 |

**Coke.**—Domestic grades are moving in fairly large volume because of favorable weather conditions. Industrial grades are being taken more freely as a result of heavier melt in the district.

**Finished Iron and Steel.**—Increased activity is shown in construction work. About 1000 tons was placed with structural fabricators during the week in projects of 100 tons or more, while smaller jobs are increasing in number. The largest reinforcing bar project in some time is the J. C. Penney Co. warehouse, requiring 3000 tons, the general contract for which has been let to Starrett Brothers, Inc., New York. The Granite City steel mill reports that its bookings for January were the heaviest for any month since March, 1927, and sufficient to operate the plant until the end of March. Prices in sheets are said to be firmer. Warehouse business in the St. Louis industrial district is very good, but the slump in orders from the oil fields offsets gains from other sources.

**Old Material.**—The market for old material continues weak, and prices are lower as the result of heavy offerings and congestion at the mills, which have bought heavily. Between 10,000 and 12,000 tons rolling mill and foundry grades were bought by mills during the week at 50c. a ton less than they paid for similar material in January. Railroad lists include: Baltimore & Ohio, 14,170 tons; Atchison, Topeka & Santa Fe, 7215 tons; Kansas City Southern, 250 tons; St. Louis-San Francisco, 29 carloads, and Standard Oil Co. (Woodriver), 3 carloads.

*Prices per gross ton f.o.b. dealers' yards and delivered St. Louis district consumers' works:*

| | |
|---|---|
| Heavy melting steel | $12.00 to $12.50 |
| No. 1 locomotive tires | 13.00 to 13.50 |
| Heavy shoveling steel | 12.00 to 12.50 |
| Miscellaneous standard-section rails, including frogs, switches and guards, cut apart | 14.00 to 14.50 |
| Railroad springs | 14.50 to 15.00 |
| Bundled sheets | 8.75 to 9.25 |
| No. 2 railroad wrought | 12.00 to 12.50 |
| No. 1 busheling | 10.25 to 10.75 |
| Cast iron borings | 9.25 to 9.75 |
| Iron rails | 13.50 to 14.00 |
| Rails for rolling | 14.50 to 15.00 |
| Machine shop turnings | 7.75 to 8.25 |
| Steel car axles | 20.00 to 20.50 |
| Iron car axles | 24.00 to 24.50 |
| Wrought iron bars and transoms | 21.00 to 21.50 |
| No. 1 railroad wrought | 10.25 to 10.75 |
| Steel rails, less than 3 ft. | 15.75 to 16.25 |
| Steel angle bars | 14.00 to 14.50 |
| Cast iron carwheels | 14.25 to 14.75 |
| No. 1 machinery cast | 15.00 to 15.50 |
| Railroad malleable | 12.50 to 13.00 |
| No. 1 railroad cast | 14.00 to 14.50 |
| Stove plate | 13.75 to 14.25 |
| Agricultural malleable | 12.50 to 13.00 |
| Relaying rails, 60 lb. and under | 20.50 to 23.50 |
| Relaying rails, 70 lb. and over | 26.50 to 29.00 |

# Buffalo

## Pig Iron Prices Slightly Firmer—Finished Steel in Good Demand

BUFFALO, Feb. 7.—Stiffer prices are reported on New England pig iron business and the local market is firmer. The International Harvester Co. closed for 1000 tons of malleable and 1000 tons of foundry for Auburn, N. Y., and the Eastern Iron Malleable Co. is said to have placed part of the 2500 to 3000 tons of malleable it required. A Troy melter wants 500 tons of foundry. The Washburn Wire Co. and the American Tube & Stamping Co. are in the market for basic iron, the former asking for 5000 tons and the latter for 3000 to 5000 tons. The Kensington-Davis foundry of Buffalo is seeking 2000 tons of foundry iron.

*Prices per gross ton, f.o.b. furnace:*

| | |
|---|---|
| No. 2 plain fdy., sil. 1.75 to 2.25 | $17.00 |
| No. 2X foundry, sil. 2.25 to 2.75 | 17.50 |
| No. 1X foundry, sil. 2.75 to 3.25 | 18.50 |
| Malleable, sil. up to 2.25 | $17.00 to 17.50 |
| Basic | 16.50 |
| Lake Superior charcoal | 27.28 |

**Finished Iron and Steel.**—The market for all lines shows an improvement in specifications and new business. The sheet market is firm, with demand better, particularly for black and automobile body sheets. Bars, shapes and plates are firm and demand is improved. Bolt and nut business is very good. A Rochester school will require 200 to 300 tons of reinforcing bars and a Buffalo school, No. 47, 130 tons. Bethlehem's Lackawanna plant, the Donner Steel Co. and the Seneca Iron & Steel Co. are maintaining good operation.

**Old Material.**—Conditions are slightly better, though prices are not strong. An additional tonnage of heavy melting steel, No. 1 grade, has been sold. This included No. 1 busheling and hydraulic compressed sheets. A tonnage of knuckles and couplers was sold at $16.50 to $17, with coil and leaf springs and rolled steel wheels at the same price. There has been some inquiry for low phosphorus billet and bloom ends, but this material is scarce. Railroad malleable purchases were at $15 and $15.50 for immediate delivery.

*Prices per gross ton, f.o.b. Buffalo consumers' plants:*

| | |
|---|---|
| **Basic Open-Hearth Grades** | |
| No. 1 heavy melting steel | $14.75 to $15.25 |
| No. 2 heavy melting steel | 13.25 to 13.75 |
| Scrap rails | 13.75 to 14.25 |
| Hydraulic compressed sheets | 13.25 to 13.75 |
| Hand bundled sheets | 9.00 to 9.50 |
| Drop forge flashings | 11.50 to 12.00 |
| No. 1 busheling | 13.25 to 13.75 |
| Heavy steel axle turnings | 12.75 to 13.25 |
| Machine shop turnings | 9.00 to 9.25 |
| **Acid Open-Hearth Grades** | |
| Railroad knuckles and couplers | 16.50 to 17.00 |
| Railroad coil and leaf springs | 16.50 to 17.00 |
| Rolled steel wheels | 16.50 to 17.00 |
| Low phosphorus billet and bloom ends | 16.50 to 17.00 |
| **Electric Furnace Grades** | |
| Heavy steel axle turnings | 12.75 to 13.25 |
| Short shoveling steel turnings | 11.00 to 11.50 |
| **Blast Furnace Grades** | |
| Short shoveling steel turnings | 10.75 to 11.00 |
| Short mixed borings and turnings | 10.50 to 11.00 |
| Cast iron borings | 10.50 to 11.00 |
| No. 2 busheling | 9.00 to 9.50 |
| **Rolling Mill Grades** | |
| Steel car axles | 16.75 to 17.25 |
| No. 1 railroad wrought | 12.50 to 13.00 |
| **Cupola Grades** | |
| No. 1 machinery cast | 14.50 to 15.00 |
| Stove plate | 13.00 to 13.25 |
| Locomotive grate bars | 10.50 to 11.00 |
| Steel rails, 3 ft. and under | 17.00 to 17.25 |
| Cast iron carwheels | 13.00 to 13.50 |
| **Malleable Grades** | |
| Railroad | 15.00 to 15.50 |
| Agricultural | 15.00 to 15.50 |
| Industrial | 15.00 to 15.50 |

**Warehouse Prices, f.o.b. Buffalo**

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.40c. |
| Soft steel bars | 3.30c. |
| Reinforcing bars | 2.75c. |
| Cold-finished flats, squares and hexagons | 4.45c. |
| Rounds | 3.95c. |
| Cold rolled strip steel | 5.85c. |
| Black sheets (No. 24) | 4.30c. |
| Galvanized sheets (No. 24) | 5.15c. |
| Blue annealed sheets (No. 10) | 3.80c. |
| Common wire nails, base per keg | $3.65 |
| Black wire, base per 100 lb. | 3.90 |

**Warehouse Prices, f.o.b. Boston**

| | Base per Lb. |
|---|---|
| Plates | 3.365c. |
| Structural shapes— | |
| Angles and beams | 3.365c. |
| Tees | 3.365c. |
| Zees | 3.465c. |
| Soft steel bars and small shapes | 3.265c. |
| Flats, hot-rolled | 4.15c. |
| Reinforcing bars | 3.265c. to 3.54c. |
| Iron bars— | |
| Refined | 3.265c. |
| Best refined | 4.60c. |
| Norway, rounds | 6.60c. |
| Norway, squares and flats | 7.10c. |
| Spring steel— | |
| Open-hearth | 5.00c. to 10.00c. |
| Crucible | 12.00c. |
| Tire steel | 4.50c. to 4.75c. |
| Bands | 4.015c. to 5.00c. |
| Hoop steel | 5.50c. to 6.00c. |
| Cold rolled steel— | |
| Rounds and hexagons | *3.35c. to 5.35c. |
| Squares and flats | *3.85c. to 5.85c. |
| Toe calk steel | 6.00c. |
| Rivets, structural or boiler | 4.50c. |
| | **Per Cent Off List** |
| Machine bolts | 50 and 5 |
| Carriage bolts | 50 and 5 |
| Lag screws | 50 and 5 |
| Hot-pressed nuts | 50 and 5 |
| Cold-punched nuts | 50 and 5 |
| Stove bolts | 70 and 10 |

*Including quantity differentials.

# Boston

## Pig Iron and Some Grades of Scrap Are Firmer in Price

BOSTON, Feb. 7.—Buffalo and eastern Pennsylvania steel mills, having increased their bookings of finished products, are practically out of the pig iron market. Buffalo iron at $16.50 a ton, base, has disappeared from New England, and $17 is the prevailing quotation, while eastern Pennsylvania iron is generally $20 a ton, base furnace. With the price situation clearer, more Buffalo iron is being sold, one furnace having booked approximately 3500 tons within 10 days. During the past week furnaces east of Buffalo took orders ranging from car lots to 300 tons, sales aggregating about 2000 tons, at delivered prices mostly equivalent to $17, Buffalo. Sales of Indian iron at $21.75 to $22 a ton, on dock here, duty paid, for No. 2 grade, are reported. An open inquiry for 1000 tons of No. 2 plain and No. 2X is still uncovered, and another melter is privately negotiating for 2000 tons. Otherwise prospective tonnages are small because most foundries are well covered into the second quarter.

*Prices of foundry iron per gross ton; delivered to most New England points:*

| | |
|---|---|
| Buffalo, sil. 1.75 to 2.25 | $21.91 |
| Buffalo, sil. 2.25 to 2.75 | 22.41 |
| East. Penn., sil. 1.75 to 2.25 | $23.15 to 23.65 |
| East. Penn., sil. 2.25 to 2.75 | 23.65 to 24.15 |
| Virginia, sil. 1.75 to 2.25 | 25.71 |
| Virginia, sil. 2.25 to 2.75 | 26.21 |
| Alabama, sil. 1.75 to 2.25 | 22.91 to 24.77 |
| Alabama, sil. 2.25 to 2.75 | 23.41 to 25.27 |

Freight rates: $4.91 from Buffalo, $3.65 from eastern Pennsylvania, $5.21 all rail from Virginia, $6.91 to $8.77 from Alabama.

**Coke.**— Activity centers in domestic fuel on a basis of $8.50 a ton, Everett, Mass. No further gain in specifications against first half by-product foundry contracts has developed beyond that noted a week ago. By-product foundry coke is still $11.50 a ton, delivered within a $3.10 freight rate zone.

**Shapes and Plates.**—Representatives of mills continue to report encouragingly on shape, plate and bar business. Fabricators, however, have few jobs of size to bid on, and competition for work is keen. Several sizable jobs are hanging over the market and should close shortly. Local fabricators expect sizable business will develop in Fall River, Mass., as a result of the recent fire there.

**Warehouse Business.**—Most warehouses have advanced wire nails 10c. per keg to conform with new mill quotations. The general price from stock is $3.50 a keg. Car lot shipments from mills are $2.70 a keg, base, and less than car lot, $2.95. The movement of iron and steel out of warehouses is increasing, although individual purchases are small. Prices are firmer in view of the fact that most warehouses are holding to scheduled lists. Foreign material, however, is still obtainable at concessions.

**Importations.**—Receipts of foreign iron at this port in January consisted of 750 tons of English, 333 tons of Dutch and 295 tons of Indian, a total of 1378 tons, which compares with 643 tons of December, 1927, none in January, last year, 4061 tons in January, 1926, and 8212 tons in January, 1925. No foreign ores were imported in January, whereas in December, last year, 8850 tons was received and in January, last year, 16,052 tons.

**Cold Rolled Strip Steel.**—The recent adjustment in cold rolled strip steel prices has further stimulated mill sales. Much of the current buying, however, is for immediate consumption. The Worcester mill is quoting 3.30c. per lb. for 1 to 3-ton lots in one shipment, and 3.05c. for larger lots.

**Old Material.**—No perceptible increase in the movement of old material has occurred. Business the past week was largely confined to heavy melting steel, railroad and yard wrought, long bundled skeleton, forge scrap and flashings. These materials, with the exception of heavy melting steel, are firmer. Current sales of skeleton are generally at $7 to $7.25 a ton on cars at shipping point, whereas a week ago sales at $6 to $6.50 were reported. Forge scrap ranges from $6 to $7 a ton, with a majority of sales at $6.50 to $7. Railroad wrought is up 50c. a ton at $10.50 to $11. Heavy melting steel is $9 to $9.10 a ton, with an occasional sale at $9.25. Textile cast continues in large supply and sells at a discount from strictly No. 1 machinery cast, when usually it brings a premium.

*Buying prices per gross ton f.o.b. Boston rate shipping points:*

| | |
|---|---|
| No. 1 heavy melting steel | $9.00 to $9.25 |
| Scrap rails | 8.50 to 8.75 |
| No. 1 railroad wrought | 10.50 to 11.00 |
| No. 1 yard wrought | 9.50 to 10.00 |
| Machine shop turnings | 6.00 to 6.25 |
| Cast iron borings (steel works and rolling mill) | 6.00 to 6.25 |
| Bundled skeleton, long | 6.50 to 7.00 |
| Forge flashings | 7.00 to 7.25 |
| Blast furnace borings and turnings | 6.00 to 6.25 |
| Forge scrap | 6.00 to 7.00 |
| Shafting | 13.00 to 13.50 |
| Steel car axles | 15.50 to 16.00 |
| Wrought pipe (1 in. in diameter, over 2 ft. long) | 8.00 to 8.50 |
| Rails for rolling | 10.00 to 10.50 |
| Cast iron borings, chemical | 9.50 to 10.00 |
| *Prices per gross ton delivered consumers' yards:* | |
| Textile cast | $14.00 to $14.50 |
| No. 1 machinery cast | 14.50 to 15.00 |
| No. 2 machinery cast | 12.50 to 13.00 |
| Stove plate | 11.00 |
| Railroad malleable | 13.00 to 13.50 |

# Cincinnati

## Foundry Melt Increases 20 Per Cent in 10 Days—Scrap Weak

CINCINNATI, Feb. 7.—Foundry melt in this district has increased about 20 per cent in the past 10 days, but the improvement is not reflected in pig iron. Shipments on contract are only fair and consumers are not manifesting interest in second quarter needs. Most melters have covered their requirements for the remainder of the first quarter, so that fresh orders booked by local dealers have been meager. The largest sale was 2000 tons of foundry iron for a southern Ohio company. The Buick Motor Co. is reported to have bought approximately 600 tons of 14 to 16 per cent ferrosilicon from a Buffalo furnace, shipment to be made by water. Southern Ohio producers are adhering to $19, base furnace, though this price is noncompetitive except for delivery by barge. Lake Erie makers are understood to be asking from $16.50 to $17, base furnace, and Southern interests are holding to $16, base Birmingham. One of the Columbus furnaces of the American Rolling Mill Co. will be blown out in March.

*Prices per gross ton, delivered Cincinnati:*

| | |
|---|---|
| So. Ohio fdy., sil. 1.75 to 2.25 | $20.89 |
| So. Ohio malleable | $20.14 to 20.89 |
| Alabama fdy., sil. 1.75 to 2.25 | 19.69 |
| Alabama fdy., sil. 2.25 to 2.75 | 20.19 |
| Tennessee fdy., sil. 1.75 to 2.25 | 19.69 |
| Southern Ohio silvery, 8 per cent | 26.89 |

Freight rates, $1.89 from Ironton and Jackson, Ohio; $3.69 from Birmingham.

**Finished Material.**— Specifications against first quarter contracts are indicative of a steady acceleration in industrial operations in this district. The number of fresh orders at the new prices has been surpris-

**Warehouse Prices, f.o.b. Cincinnati**

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.40c. |
| Bars, soft steel or iron | 3.30c. |
| Reinforcing bars | 3.30c. |
| Hoops | 4.00c. to 4.25c. |
| Bands | 3.95c. |
| Cold-finished rounds and hexagons | 3.85c. |
| Squares | 4.35c. |
| Open-hearth spring steel | 4.75c. to 5.00c. |
| Black sheets (No. 24) | 4.05c. |
| Galvanized sheets (No. 24) | 4.90c. |
| Blue annealed sheets (No. 10) | 3.60c. |
| Structural rivets | 3.85c. |
| Small rivets | 65 per cent off list |
| No. 9 annealed wire, per 100 lb. | $3.00 |
| Common wire nails, base per keg | 2.95 |
| Cement coated nails, base 100 lb. keg | 2.95 |
| Chain, per 100 lb. | 7.55 |
| | Net per 100 Ft. |
| Lap-welded steel boiler tubes, 2-in. | $18.00 |
| 4-in. | 38.00 |
| Seamless steel boiler tubes, 2-in. | 19.00 |
| 4-in. | 39.00 |

ingly large. One of the bright spots is the favorable attitude which buyers in general have shown toward the effort of mills to get more money for their products. The advance of $2 a ton on common wire nails and on plain wire has served as a stimulus for the better movement of material on contracts calling for delivery prior to April 1, but the actual test of the market will not come for some time. The producer at Ironton is understood to have followed the lead of Eastern makers in establishing prices on a higher basis, so that the prevailing quotation on common wire nails is now $2.65 per keg, Ironton or Pittsburgh, and on plain wire $2.50 per 100 lb., Ironton or Pittsburgh. Bookings of sheets continue at a high rate, the early days of February having kept pace with January. Mills in this district have enough orders in hand to schedule rollings about two weeks ahead. Prices are fairly steady at 2.10c., base Pittsburgh, for blue annealed, 3.75c. for galvanized and 2.90c. for black. Only in structural steel are activities lagging. The Ohio State Highway Commission is taking bids for the general contract for a highway bridge in the northeastern part of the State for which about 700 tons will be required. Bars, structural shapes and plates are firm at 1.85c., base Pittsburgh.

**Reinforcing Bars.**—A gradual increase in the strength of prices is noted. New billet bars are bringing from 1.85c. to 1.90c., base Pittsburgh, while rail steel is firm at 1.75c., base mill. In at least one instance the latter has been sold at 1.80c. for delivery in 60 days.

**Warehouse Business.**—Jobbers report a slight increase in sales, but total bookings from a tonnage standpoint are still below normal. The slackness in building activities in this district has been partially responsible for the rather unsatisfactory condition. Prices are firm and unchanged.

**Coke.**—A sudden influx of specifications for by-product foundry coke is reported by local dealers, who say that orders on hand are sufficient to take practically the entire month's output. As a result of this betterment, February shipments for at least two companies will be the best in five months. There also has been a buying spurt of more limited proportions in by-product domestic coke. Prices are unchanged.

*Foundry coke prices per net ton, delivered Cincinnati:* By-product coke, $9.52 to $9.64; Wise County coke, $7.59 to $8.09; New River coke, $10.09 to $10.59. Freight rates: $2.14 from Ashland, Ky.; $2.59 from Wise County and New River ovens.

**Old Material.**—Melting steel is off 25c. a ton and weakness has cropped out in other items. A steel company in this district bought a small tonnage of heavy melting steel the past week and is reported to have paid a delivered price of $14.75. Mills are taking a fair amount of material on current contracts, but are hesitant about placing orders for future delivery. The Chesapeake & Ohio has put out a list of 8000 tons, half of which is rails, and the Louisville & Nashville 7800 tons.

*Dealers' buying prices per gross ton f.o.b. cars, Cincinnati:*

| | |
|---|---|
| Heavy melting steel | $11.50 to $12.00 |
| Scrap rails for melting | 12.25 to 12.75 |
| Loose sheet clippings | 9.00 to 9.50 |
| Bundled sheets | 9.50 to 10.00 |
| Cast iron borings | 8.50 to 9.00 |
| Machine shop turnings | 8.50 to 9.00 |
| No. 1 busheling | 10.50 to 11.00 |
| No. 2 busheling | 7.50 to 8.00 |
| Rails for rolling | 13.00 to 13.50 |
| No. 1 locomotive tires | 13.50 to 14.00 |
| No. 1 railroad wrought | 11.50 to 12.00 |
| Short rails | 17.00 to 17.50 |
| Cast iron carwheels | 12.75 to 13.25 |
| No. 1 machinery cast | 16.00 to 17.00 |
| No. 1 railroad cast | 13.50 to 14.00 |
| Burnt cast | 8.00 to 8.50 |
| Stove plate | 9.00 to 9.50 |
| Brake shoes | 10.00 to 10.75 |
| Railroad malleable | 12.75 to 13.25 |
| Agricultural malleable | 12.25 to 12.75 |

By-product coke plants associated with blast furnaces made a smaller proportion of the by-product coke output in 1927 than for some years past. The United States Bureau of Mines places this ratio at 81.3 per cent, leaving 18.7 per cent for the independent ovens. The furnace figure compares with 82.6 per cent in 1926 and with ratios varying from 82.3 to 83.6 per cent in the four preceding years.

# San Francisco

## Southern Pacific Orders 4400 Tons of Tie Plates—Plates $1 Higher

SAN FRANCISCO, Feb. 7 (*By Telegraph*).—Demand in most lines is well sustained, with shapes and cast iron pipe the most active. Important developments include the award of 4400 tons of tie plates by the Southern Pacific Co. to Eastern makers and 1200 tons of structural shapes for a paper bag plant at Tacoma, Wash., to the Hofius Steel & Equipment Co., and 800 tons for the Alexander & Baldwin Building in Honolulu to the Honolulu Iron Works.

**Pig Iron.**—About 800 tons of Indian pig iron arrived and was divided between San Francisco and Los Angeles melters. The next shipment of 1400 tons is due the latter part of the month.

*Prices per gross ton at San Francisco:*

| | |
|---|---|
| *Utah basic | $25.00 to $26.00 |
| *Utah foundry, sil. 2.75 to 3.25 | 25.00 to 26.00 |
| **Indian foundry, sil. 2.75 to 3.25 | 24.00 to 25.00 |
| **German foundry, sil. 2.75 to 3.25 | 24.25 |

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

**Plates and Shapes.**—Structural shape awards for the week exceeded 2800 tons and pending business involves 24,000 tons. No plate awards of size have been made, but bids have been opened on a tanker for the Standard Oil Co., San Francisco, involving 3500 tons of plates and 1500 tons of shapes. The Newport News Shipbuilding & Dry Dock Co. was low bidder. Bids will be opened Feb. 17 on 1500 tons for a penstock at Seattle, Wash. Plate prices have been advanced $1 a ton from 2.25c. to 2.30c., c.i.f. Pacific Coast ports.

**Warehouse Prices, f.o.b. San Francisco**

| | Base per Lb. |
|---|---|
| Plates and structural shapes | 3.15c. |
| Soft steel bars | 3.15c. |
| Small angles, ⅞-in. and over | 3.15c. |
| Small angles, under ⅞-in. | 3.55c. |
| Small channels and tees, ¾-in. to 2¾-in. | 3.75c. |
| Spring steel, ¼-in. and thicker | 5.00c. |
| Black sheets (No. 24) | 4.80c. |
| Blue annealed sheets (No. 10) | 3.75c. |
| Galvanized sheets (No. 24) | 5.35c. |
| Structural rivets, ½-in. and larger | 5.65c. |
| Common wire nails, base per keg | $3.35 |
| Cement coated nails, 100-lb. keg | 3.35 |

**Reinforcing Steel.**—The only reinforcing steel award of the week was 500 tons taken by the Pacific Coast Steel Co. for a paper bag plant at Tacoma.

**Cast Iron Pipe.**—Bert Noble, San Francisco, has been awarded the order for 263 tons of 2 to 6-in. pipe for improvement of Voltaire Street, San Diego. Pending business involves 4000 tons.

**Coke.**—About 4000 tons of British coke has arrived, most of it going to foundries in the San Francisco and Los Angeles districts. The next shipment is due about the middle of March.

## Detroit Scrap Market Weak

DETROIT, Feb. 7.—Further signs of weakness were noted in the market on old material in this district during the past week because some mills have held up deliveries in the face of increasing output by the larger scrap producers.

*Dealers' buying prices per gross ton, f.o.b. cars, Detroit:*

| | |
|---|---|
| Heavy melting and shoveling steel | $12.00 to $12.50 |
| Borings and short turnings | 8.75 to 9.25 |
| Long turnings | 7.75 to 8.25 |
| No. 1 machinery cast | 14.50 to 15.50 |
| Automobile cast | 18.00 to 19.00 |
| Hydraulic compressed sheets | 10.75 to 11.25 |
| Stove plate | 11.50 to 12.50 |
| No. 1 busheling | 9.50 to 10.00 |
| Sheet clippings | 7.50 to 8.00 |
| Flashings | 10.00 to 10.50 |

Loading of revenue freight for the week ended Jan. 21 totaled 884,095 cars, according to reports of the Car Service Division, American Railway Association. This was a decrease of 22,639 cars from the preceding week.

# FABRICATED STRUCTURAL STEEL

## Awards of 54,000 Tons—Chicago Civic Opera House Will Take 18,000 Tons

Awards totaling close to 44,500 tons made the past week's business one of the best so far this year and new projects calling for a total of nearly 54,000 tons were larger than any week since Jan. 1. The largest single awards were 9000 tons for a viaduct in Cleveland, 5000 tons for a bridge in Pittsburgh, and 5000 tons for an office building in New York. Included in pending business is 18,000 tons for the Chicago Civic Opera House, 11,000 tons for a New York subway and 4000 tons for a State office building in New York. Awards follow:

LYNN, MASS., 580 tons, Lynn Gas & Electric Co. power house addition, to New England Structural Co.

SOMERVILLE, MASS., 100 tons, garage, to New England Structural Co.

STATE OF NEW HAMPSHIRE, 1500 tons, bridges, 14 to American Bridge Co., two to Boston Bridge Works, Inc., and one to Standard Engineering Co.

NEW YORK, 11,300 tons reported to Structural Steel Board of Trade, Inc.; 9800 tons in following jobs not previously reported: Savings Bank at Sixth Avenue and Ninth Street and warehouse at 167th Street and Sedgwick Avenue, to George A. Just Co.; 15-story apartment building at 15 East Ninety-sixth Street, 37-story Lefcourt office building at 521 Fifth Avenue, 15-story apartment building at Ninety-first Street and Riverside Drive and pavilion for Clarence Mackay at Roslyn, L. I., to Paterson Bridge Co.; supports for power station installation for Brooklyn Edison Co., to McClintic-Marshall Co.; chapel and faculty building for Fordham University, to Lehigh Structural Steel Co.; alteration to Cohan Theater at Broadway and Forty-third Street, Proctor's Theater at Third Avenue and Fifty-eighth Street, 14-story office building at Madison Avenue and Seventy-sixth Street and one-story club at 115 West Seventieth Street, to Harris Structural Steel Co.

NEW YORK, 1600 tons, loft building at Eighth Avenue and Forty-sixth Street, to Harris Structural Steel Co.

NEW YORK, 1500 tons, apartment building on West Ninety-sixth Street, to Easton Structural Steel Co.

NEW YORK, 1200 tons, apartment building on Eighty-eighth Street, to Harris Structural Steel Co.

NEW YORK, 650 tons, apartment building at 105 East Twenty-first Street, to Easton Structural Steel Co.

NYACK, N. Y., 400 tons, high school, to Bethlehem Steel Co.

PERTH AMBOY, N. J., 500 tons, building for American Smelting & Refining Co., to Pittsburgh Bridge Co.

GREENSAND, N. J., 1725 tons, coal distillation plant for Combustion Engineering Corporation, to Jones & Laughlin Steel Corporation.

WALDWICK, N. J., 100 tons, plate girder bridge for Erie Railroad, to Phoenix Bridge Co.

PHILADELPHIA, 200 tons, plant building for Olney Foundry Co., to Belmont Iron Works.

PITTSBURGH, 5000 tons, Thirty-first Street bridge, to Fort Pitt Bridge Works.

AMBRIDGE, PA., 150 tons, municipal water tanks, to Pittsburgh-Des Moines Steel Co.

DETROIT, 320 tons, branch for Bank of Detroit, to local fabricator.

CORPUS CHRISTI, TEX., 370 tons, dock sheds, to local fabricator.

SCHILLER PARK, ILL., 1300 tons, viaduct for Soo line, to Bethlehem Steel Bridge Corporation.

CLEVELAND, 9000 tons, Prospect Avenue viaduct, to Mount Vernon Bridge Co.

BUFFALO, 250 tons, Public School No. 23, to Henesey-Mann Structural Co., local.

CANTON, OHIO, 3000 tons, plant additions for Timken Roller Bearing Co., to McClintic-Marshall Co.

DOWNERS GROVE, ILL., 100 tons, theater, to Midland Structural Steel Co., Chicago.

POWERTON, ILL., 156 tons, miscellaneous steel for Super-Power Co., to Vierling Steel Works, Chicago.

CARY, ILL., 300 tons, building for Cary Brick Co., to Hansell-Elcock Co., Chicago.

BURLINGTON, IOWA, 300 tons, barge for Burlington Barge Terminals, to St. Louis Structural Steel Co.

BURLINGTON, 130 tons, municipal dock house, to Lakeside Bridge & Steel Co.

MILWAUKEE, 100 tons, factory, for Federal Asbestos & Insulating Co., to Lakeside Bridge & Steel Co.

BIRMINGHAM, 350 tons, Protective Life Insurance building, to Ingalls Iron Works Co.

LAKE CHARLES, LA., 600 tons, municipal wharf sheds, to Orange Car & Steel Co., Orange, Tex.

STATE OF TEXAS, 1100 tons, tanks for Pan-American Co., to Chicago Bridge & Iron Works.

LINCOLN, NEB., 1500 tons, third wing of State House, to unnamed bidder.

ST. LOUIS, 130 tons, girders in addition to Jefferson Hotel, to Mississippi Valley Structural Steel Co.

ST. LOUIS, 450 tons, girders in Arsenal Street viaduct, to Stupp Brothers Bridge & Iron Co.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

MIDDLETOWN, CONN., 575 tons, office building.

NEW YORK, 11,000 tons, section 1, route 8, of subway in Borough of Queens; bids close March 2.

NEW YORK, 4000 tons, State office building.

NEW YORK, 3500 tons, highway bridge in Borough of Queens.

NEW YORK, 2500 tons, loft building at 228 East Forty-fifth Street.

NEW YORK, 350 tons, apartment building at 69 East Seventy-seventh Street.

NEW YORK, 125 tons, gymnasium at Amsterdam Avenue and 138th Street.

BAYONNE, N. J., 300 tons, tanks for Standard Oil Co. of New Jersey.

EAST ORANGE, N. J., 600 tons, Municipal Building.

PHILADELPHIA, 300 tons, public school.

PHILADELPHIA, 600 tons, Uptown Theater; may be changed to reinforced concrete.

PHILADELPHIA, 150 tons, column cores and girders for Blum Store, previously reported as 1200 tons but revised to reinforced concrete; general contract to Wark Construction Co.

PHILADELPHIA, 2500 tons, Integrity bank and office building, Sixteenth and Walnut Streets.

PHILADELPHIA, 2000 tons of sheet steel piling, Tacony-Palmyra bridge; general contract to Dravo Construction Co.

PHILADELPHIA, 358 tons, Radcliffe central office building for Bell Telephone Co.; general contract to John N. Gill Construction Co.

PONTIAC, MICH., 900 tons, building for J. W. Cook Corporation.

WASHINGTON, 1000 tons, power house for Stone & Webster, Inc.

COLES COUNTY, ILL., 200 tons, bridge for Illinois Highway Commission; St. Louis Structural Steel Co., low bidder.

CHICAGO, 18,000 tons, Civic Opera House.

CHICAGO, 2800 tons, approach to Robey Street bridge.

CHICAGO, tonnage being estimated, approach to La Salle Street bridge.

CHICAGO, 300 tons, building for Strauss & Schram.

WEST PULLMAN, ILL., 400 tons, building for Columbia Mills, Inc.

MILWAUKEE, 1500 tons, County section of Milwaukee Public Safety Building; bids close March 16; separate bids on fabrication and delivery, and on erection.

SAN DIEGO, CAL., 700 tons, power house for Byllesby Engineering & Management Corporation, Chicago.

# RAILROAD EQUIPMENT

## St. Louis-San Francisco Places Orders for 4000 Freight Cars

St. Louis-San Francisco has placed orders for 4000 freight cars, distributed as follows: 1000 box and 500 hopper cars with American Car & Foundry Co., 500 hopper and 500 automobile cars with Pullman Car & Mfg. Corporation, and 500 box, 500 flat and 500 hopper cars with General American Car Co.

Swift & Co. have ordered 500 underframes from Bettendorf Co.

Seaboard Air Line has made inquiry for 25 Mikado type locomotives.

Chicago, Rock Island & Pacific is inquiring for 10 baggage and six baggage-mail cars, 10 coaches and 10 suburban coaches.

Southern Pacific has withdrawn its inquiry for 300 box car underframes and 300 superstructures.

Mud Valley Logging Co., Olympia, Wash., has purchased a Mallet type locomotive from Baldwin Locomotive Works.

Mexican Railways have ordered two Pacific type locomotives from American Locomotive Co.

American Smelting & Refining Co. is inquiring for 60 gondola cars.

Bangor & Aroostook will build 100 single-sheathed box cars at its Derby, Me., shops.

Carnegie Steel Co. has ordered 15 tank cars from Petroleum Iron Works and 35 from Standard Steel Car Co.

Woodward Iron Co. has ordered 50 mine cars from American Car & Foundry Co.

Long Island Railroad has ordered two baggage-mail cars from American Car & Foundry Co.

Monon will buy one gas-electric car.

# NON-FERROUS METAL MARKETS

**The Week's Prices**

Cents per Pound for Early Delivery

| | Feb. 7 | Feb. 6 | Feb. 4 | Feb. 3 | Feb. 2 | Feb. 1 |
|---|---|---|---|---|---|---|
| Lake copper, New York | 14.25 | 14.25 | 14.25 | 14.25 | 14.25 | 14.25 |
| Electrolytic copper, N. Y.* | 13.87½ | 13.87½ | 13.87½ | 13.87½ | 13.87½ | 13.87½ |
| Straits tin, spot, N. Y. | 53.25 | 53.62½ | .... | 54.00 | 54.37½ | 54.25 |
| Lead, New York | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 |
| Lead, St. Louis | 6.22½ | 6.22½ | 6.25 | 6.25 | 6.25 | 6.25 |
| Zinc, New York | 6.00 | 6.00 | 6.00 | 6.00 | 5.97½ | 6.00 |
| Zinc, St. Louis | 5.65 | 5.65 | 5.65 | 5.65 | 5.62½ | 5.65 |

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Feb. 7.—None of the markets is particularly active, excepting possibly tin. Demand for copper has been moderate with prices exceedingly firm. Tin sales have been quite large at new low levels for several years. Very little change in lead has developed and both demand and prices for zinc remain about the same.

**Copper.**—A moderate spurt in demand from domestic producers developed last week, but the market in the last few days has been exceedingly quiet. Firmness in prices is a feature despite light demand both from domestic and foreign consumers. Practically all producers are adhering rigidly to 14.12½c., delivered in the Connecticut Valley, at which level most of the metal changed hands. Some metal has been available from custom smelters now and then at a concession, but the quantity has been small. The official quotation of Copper Exporters, Inc., is unchanged at 14.50c., c.i.f., usual European ports. Lake copper is reported quiet but firm at 14.25c., delivered.

**Tin.**—Total sales for the week ended Saturday, Feb. 4, were about 1300 tons, of which 800 tons was sold up to Thursday night. Most of the latter was taken by dealers. Consumers did not enter the market until Friday, when sales were made as low as 53.75c. On that day consumers took most of the offerings and were evidently buying on the scale down. Yesterday, Monday, the market was dull with 75 tons changing hands, but today consumers bought quite liberally again with futures selling at 53c. to 53.12½c. Spot Straits tin today was quoted at 53.25c., New York, which is the lowest price since April 21, 1925, when it was 52.62½c. Two causes mentioned for the low prices are the increase in world production last year and the fact that consumers are fairly well covered for February and March, at least. London prices today fell sharply from those of yesterday and are considerably below those of a week ago, with spot standard quoted at £238 15s., future standard at £240 5s. and spot Straits at £240 10s. The Singapore price today was £245 5s. Arrivals thus far this month have been 630 tons, with 6240 tons reported afloat.

**Lead.**—Offerings of resale metal in the West have somewhat weakened the market there and quotations range from 6.22½c. to 6.25c., depending on the producer. The quotation of the leading interest is unchanged at 6.50c., New York, as its contract price. While no large quantities have changed hands, there is a fair demand for smaller lots.

**Zinc.**—Another advance in ore prices took place last week bringing the quotation to $38, Joplin. For the first time in several weeks sales exceeded production. A corresponding increase in the price of prime Western zinc has not developed and quotations during the week have ranged from 5.62½c. to 5.67½c., St. Louis, with the quotation today largely nominal at 5.65c., St. Louis, and 6c., New York. It appears possible that this price would be slightly shaded under favorable conditions. Sellers report a fair demand from day to day, but they are not anxious to force the issue, particularly for future delivery.

**Nickel.**—Wholesale lots of ingot nickel are quoted at 35c. with shot nickel at 36c. and electrolytic nickel at 37c. per lb.

**Antimony.**—Demand is very light and Chinese metal for spot and early future delivery is a little easier at 11c., New York, duty paid.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, in ingots, is quoted at 23.90c. per lb., delivered.

### Non-Ferrous Metals at Chicago

CHICAGO, Feb. 7.—Prices, with the exception of tin, are firm. Sales are numerous for prompt delivery, while future business is only moderately active. The old metal market is quiet.

*Prices, per lb., in carload lots:* Lake copper, 14.25c.;

### Metals from New York Warehouse

*Delivered Prices Per Lb.*

| | |
|---|---|
| Tin, Straits pig | 56.00c. to 57.00c. |
| Tin, bar | 58.00c. to 59.00c. |
| Copper, Lake | 15.25c. |
| Copper, electrolytic | 15.00c. |
| Copper, casting | 14.25c. |
| Zinc, slab | 7.25c. to 7.75c. |
| Lead, American pig | 7.65c. to 8.65c. |
| Lead, bar | 9.90c. to 10.90c. |
| Antimony, Asiatic | 13.00c. to 13.50c. |
| Aluminum No. 1 ingot for remelting (guaranteed over 99 per cent pure) | 27.00c. to 28.00c. |
| Aluminum ingots, No. 12 alloy | 26.00c. to 27.00c. |
| Babbitt metal, commercial grade | 30.00c. to 40.00c. |
| Solder, ½ and ½ | 36.00c. to 37.00c. |

### Metals from Cleveland Warehouse

*Delivered Prices Per Lb.*

| | |
|---|---|
| Tin, Straits pig | 59.50c. |
| Tin, bar | 61.50c. |
| Copper, Lake | 15.25c. |
| Copper, electrolytic | 15.25c. |
| Copper, casting | 14.50c. |
| Zinc, slab | 7.75c. |
| Lead, American pig | 7.25c. |
| Antimony, Asiatic | 16.00c. |
| Lead, bar | 9.50c. |
| Babbitt metal, medium grade | 19.75c. |
| Babbitt metal, high grade | 64.50c. |
| Solder, ½ and ½ | 35.50c. |

### Rolled Metals from New York or Cleveland Warehouse

*Delivered Prices, Base Per Lb.*

| | |
|---|---|
| *Sheets—* | |
| High brass | 18.50c. to 19.25c. |
| Copper, hot rolled | 22.75c. to 23.75c. |
| Copper, cold rolled, 14 oz. and heavier | 25.25c. to 26.25c. |
| *Seamless Tubes—* | |
| Brass | 23.37½c. to 24.37½c. |
| Copper | 24.50c. to 25.50c. |
| *Brazed Brass Tubes* | 26.50c. to 27.50c. |
| *Brass Rods* | 16.25c. to 17.25c. |

**From New York Warehouse**

*Delivered Prices, Base Per Lb.*

| | |
|---|---|
| *Zinc sheets (No. 9), casks* | 10.00c. to 10.50c. |
| *Zinc sheets, open* | 10.50c. to 11.00c. |

## Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products have not been changed for more than two months. Lead full sheets are still being quoted at the advance of Dec. 1, and zinc sheets have held at 10c., base, for six months.

### List Prices, Per Lb., f.o.b. Mill

*On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over*

| | |
|---|---|
| *Sheets—* | |
| High brass | 18.75c. |
| Copper, hot rolled | 22.75c. |
| Zinc | 10.00c. |
| Lead (full sheets) | 10.00c. to 10.25c. |
| *Seamless Tubes—* | |
| High brass | 23.62½c. |
| Copper | 24.50c. |
| *Rods—* | |
| High brass | 16.50c. |
| Naval brass | 19.25c. |
| *Wire—* | |
| Copper | 15.75c. |
| High brass | 19.25c. |
| *Copper in Rolls* | 21.75c. |
| *Brazed Brass Tubing* | 26.75c. |

**Aluminum Products in Ton Lots**

*The carload freight rate is allowed to destinations east of Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.*

| | |
|---|---|
| Sheets, 0 to 10 gage, 3 to 30 in. wide | 33.00c. |
| Tubes, base | 42.00c. |
| Machine rods | 34.00c. |

**Rolled Metals, f.o.b. Chicago Warehouse**

*(Prices Cover Trucking to Consumers' Doors in City Limits)*

| *Sheets*— | Base per Lb. |
|---|---|
| High brass | 18.75c. |
| Copper, hot rolled | 22.75c. |
| Copper, cold rolled, 14 oz. and heavier | 25.00c. |
| Zinc | 11.00c. |
| Lead, wide | 9.75c. |
| *Seamless Tubes*— | |
| Brass | 25.12½c. |
| Copper | 26.00c. |
| *Brazed Brass Tubes* | 26.75c. |
| *Brass Rods* | 16.50c. |

tin, 55c.; lead, 6.35c.; zinc, 5.75c.; in less-than-carload lots, antimony, 12.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10c.; copper bottoms, 9c.; red brass, 9c.; yellow brass, 6.75c.; lead pipe, 5c.; zinc, 3.25c.; pewter, No. 1, 34c.; tin foil, 40c.; block tin, 50c.; aluminum, 12.50c.; all being dealers' prices for less-than-carload lots.

## REINFORCING STEEL

### New Projects Include 3000 Tons for St. Louis Warehouse—Awards Small

The tonnage of reinforcing bars awarded and specified in new projects registered a decline this week, with less than 3000 tons placed and about 3800 tons of new business. The largest award was 1600 tons for a building in Fort Worth, Tex., for Montgomery Ward & Co. An outstanding inquiry is 3000 tons for the J. C. Penney Co. warehouse in St. Louis. Awards follow:

CAMBRIDGE, MASS., 360 tons, Lever Brothers warehouse, to Barker Steel Co.

LYNN, MASS., 100 tons, Lynn Gas & Electric Co. power house addition, to Morrison Stevens Co.

LONG ISLAND CITY, N. Y., 200 tons, warehouse for R. H. Macy & Co., Inc., to Concrete Steel Co.

GRIFFIN, GA., 100 tons, Graham Mfg. Co. plant addition, to Connors Steel Co., Birmingham.

TAYLOR, S. C., 300 tons, plant building, to Connors Steel Co.

FORT WORTH, TEX., 1600 tons, Montgomery Ward & Co. building, to Concrete Engineering Co.

CHICAGO, 100 tons of rail steel bars, building in Humboldt Park, to Calumet Steel Co.

CHICAGO, 200 tons of rail and billet steel bars, Cornell apartment building, to Barton Spider-Web System.

**Reinforcing Bars Pending**

Inquiries for reinforcing steel bars include the following:

NEW YORK, 300 tons, Harlem River subway tunnel; George H. Flinn Corporation, low bidder on general contract.

ROCHESTER, N. Y., 200 to 300 tons, Benjamin Franklin school; bids taken, Feb. 20.

BUFFALO, 130 tons, school No. 47; bids taken, M. B. Parker, Cleveland, contractor.

CHICAGO, tonnage being estimated, Civic Opera House; Graham, Anderson, Probst & White, architects.

CHICAGO, 700 tons, Passavant Hospital; George A. Fuller Co., general contractor.

MILWAUKEE, 225 tons, County highway trestle; bids close Feb. 21.

ST. LOUIS, 3000 tons, warehouse for J. C. Penney Co.; Starrett Brothers, Inc., New York, general contractor.

## Youngstown-Inland Merger Details Are Being Worked Out

YOUNGSTOWN, Feb. 7.—Details are being worked out for the merger of the Youngstown Sheet & Tube Co. and the Inland Steel Co., which will operate under the name of the Youngstown-Inland Steel Corporation as an Ohio corporation. A new company will not be formed, but the charter under which the Sheet & Tube company operates will be amended to provide for the changes. Special stockholders' meetings of both companies will be held March 15, when the merger plan, already approved by directors, will be ratified. President James A. Campbell of Sheet & Tube has gone to Florida for a month's vacation.

**Old Metals, Per Lb., New York**

*The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators and the selling prices are those charged consumers after the metal has been properly prepared for their use.*

| | Dealers' Buying Prices | Dealers' Selling Prices |
|---|---|---|
| Copper, heavy crucible | 12.00c. | 13.50c. |
| Copper, heavy and wire | 11.75c. | 12.875c. |
| Copper, light and bottoms | 10.00c. | 11.25c. |
| Brass, heavy | 7.00c. | 8.50c. |
| Brass, light | 6.00c. | 7.50c. |
| Heavy machine composition | 9.50c. | 10.75c. |
| No. 1 yellow brass turnings | 7.75c. | 9.00c. |
| No. 1 red brass or composition turnings | 8.75c. | 9.75c. |
| Lead, heavy | 5.25c. | 5.625c. |
| Lead, tea | 4.25c. | 4.75c. |
| Zinc | 3.75c. | 4.25c. |
| Sheet aluminum | 12.75c. | 14.50c. |
| Cast aluminum | 12.75c. | 14.50c. |

## Obituary

CAPT. JAMES MOWATT, retired head of the Chicago Ship Building Co., Chicago, died Jan. 24. He was born near Duncan's Bay in Scotland and came to America in 1863. He was manager of the Chicago Dry Dock Co. from 1880 to 1892.

—

GEORGE BERGMAN, assistant secretary and export sales manager of the Cincinnati Milling Machine Co., Cincinnati, died suddenly Feb. 1. He was 44 years of age and had been associated with the company for 26 years. During a part of that time he was head of the commercial sales department and also was identified with the export department. He was recently appointed export sales manager.

—

CHARLES KROESCHELL, until five years ago president of the Kroeschell Brothers Co., Chicago, manufacturer of steam boilers, died Jan. 31.

—

BERTON B. BRATT, active for many years in blast furnace construction, died at his Pittsburgh home Jan. 31. For the past 14 years he had been connected with the engineering department of the Eliza furnaces, Jones & Laughlin Steel Corporation, Pittsburgh. Previously while identified with Julian Kennedy, Pittsburgh, he had supervised the reconstruction of the Isabella furnaces, Carnegie Steel Co., and the building of the furnaces of the Rogers-Brown Iron Co., Buffalo, and the American Steel & Wire Co., Cleveland. He was born at Glenfield, Pa., in 1873 and was graduated from the University of Pittsburgh in 1893.

—

FRANK F. VANDERVORT, for many years Eastern sales representative for the Wheeling Mold & Foundry Co., Wheeling, W. Va., died on Feb. 3 at his home in Chestnut Hill, Philadelphia. He was 62 years of age. Mr. Vandervort was born at Pittsburgh and attended Cornell University.

—

W. F. HOPKINS, metals sales manager of the Republic Metalware Co., Buffalo, died suddenly on Jan. 19 at his home in that city, aged 47 years. He had been associated with the Republic company since 1918 and was previously identified for 17 years with the Buffalo Wire Works, Buffalo.

—

CHARLES F. W. FELT, chief engineer for the Atchison, Topeka & Santa Fe, died Feb. 5 at Colorado Springs, Colo., after an illness of several months. He was president of the Railway Engineers' Association in 1926.

Hickman, Williams & Co., pig iron brokers, who for years have had Eastern selling offices in New York and Boston, as well as in Philadelphia, have decided to consolidate the New York and New England territories with one office at 120 Broadway, New York. Rufus W. Page will continue to represent the firm in New England, making his headquarters at Auburndale, Mass.

## PERSONAL

William Lawrence Saunders, chairman Ingersoll-Rand Co., New York; J. Vipond Davies, of Jacobs & Davies, consulting engineers, 30 Church Street, New York, and Bancroft Gherardi, vice-president American Telephone & Telegraph Co., New York, simultaneously completed notably long periods of continuous service in the United Engineering Society at the annual meeting of its board of trustees held on Jan. 26. Mr. Saunders has been a trustee for 12 years, Mr. Davies for 11½ years, and Mr. Gherardi for nearly eight years. Each has served as vice-president, as chairman of the finance committee and as president. The latter office they filled, respectively, for three, four and one years. For two terms Mr. Saunders represented the American Institute of Mining and Metallurgical Engineers, of which he is a past-president, and for two terms the American Society of Mechanical Engineers. Mr. Davies represented for two terms the American Society of Civil Engineers, of which he is a past vice-president, and for two terms the American Institute of Mining and Metallurgical Engineers. Mr. Gherardi represented continuously the American Institute of Electrical Engineers, of which he is now president.

—

P. J. McCarty, who for a number of years has served as sales representative in Connecticut of the Ludlum Steel Co., Watervliet, N. Y., has been appointed district sales manager of the company in New York. The New York office, which has been at 33 West Forty-second Street, will be removed to 40 Rector Street.

—

A. E. Starbuck, for many years identified with the Haynes interests, Kokomo, Ind., manufacturers of stellite and other alloys, has been elected president of the American Stainless Steel Co., 801 Commonwealth Building, Pittsburgh, succeeding John C. Neale, who recently resigned.

—

W. A. Whaley has been appointed district manager in Virginia and North Carolina for the Fitzsimons Co., Youngstown, with headquarters at Norfolk, Va. Walter F. Bray has been added to the company's sales organization at Detroit.

—

R. H. Minton, general superintendent General Ceramics Co., Metuchen, N. J., has resigned, following a connection of 14 years with that company. He has had supervision over all plants of the organization in the Raritan River district, devoted to the production of sanitary ware, refractories, chemical stoneware and kindred products. Mr. Minton has been specializing in refractory and high-refractory research and investigations for blast furnace and steel mill service and will engage as a consulting engineer in this line. He is a past-president of the American Ceramic Society.

—

H. W. Caldwell, who was recently elected president of the Cleveland Stone Co., Cleveland, has been president of the Sterling Grinding Wheel Co. since its acquisition by the Stone company in 1922. Previously he was for many years vice-president of the latter company and in direct charge of its grindstone department. The Sterling company is operated as the abrasive division of the Cleveland Stone Co.

—

J. W. McLeod, formerly with Hall-Will, Inc., Erie, Pa., has been appointed Erie district sales representative for the Arch Machinery Co., 1005 Park Building, Pittsburgh, and will handle sales in northern Pennsylvania, with headquarters in Erie.

—

John C. Neale has been elected a director of the Pittsburgh Valve Foundry & Construction Co., Pittsburgh, succeeding J. N. Anderson, Jr., resigned, and also is serving as assistant to the president. Mr. Neale for almost five years was president and general manager of the American Stainless Steel Co., Pittsburgh, and previously had been identified in executive capacities with the Midvale Steel & Ordnance Co., the Central Steel Co., Massillon, Ohio, construction of the plant of which he supervised, and the Carnegie Steel Co.

—

Frank A. Demms and H. S. Bradley have been elected directors of the Shenango Furnace Co., Pittsburgh, and Mr. Bradley has been made assistant to the president. Mr. Demms is treasurer of the company and has been associated with the W. P. Snyder interests for 25 years. Mr. Bradley is president of Shenango-Penn Mold Co., an affiliated Shenango Furnace Co. interest.

—

Herbert C. Poole, for the past three years works manager Colonial Steel Co., Pittsburgh, has been appointed assistant general sales manager in charge of the eastern district, including the Philadelphia, New York and Boston offices of the company. He will make his headquarters in New York. Mr. Poole has been identified with the company for 20 years and was New York district sales manager prior to his appointment as works manager.

—

W. F. Piper, of the Beardsley & Piper Co., Chicago, manufacturer of foundry equipment, is in a serious condition at Buhl Hospital, Sharon, Pa., because of injuries sustained Feb. 2, when an airplane in which he was flying from Sharpsville, Pa., to Chicago, crashed in a forced landing. Elmer L. Beardsley, also a member of the firm, pilot of the plane, was cut about the face but escaped serious injury. Mr. Beardsley and Mr. Piper flew from Chicago to Sharpsville, 410 miles, in 3 hr. 15 min. The accident occurred as they were taking off for the return trip to Chicago.

—

Herbert Mertz, formerly secretary and sales manager for the Orton Crane & Shovel Co., Chicago, has resigned and will establish an office in New York to sell the products of that company in New York and New England. P. A. Orton, Jr., becomes secretary and sales manager of the Orton company.

—

Dr. Michael Pupin, professor of electrical engineering at Columbia University, is the recipient of the 1928 Washington Award. Presentation was made Feb. 2 at a dinner given at the Palmer House, Chicago. The American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the Western Society of Engineers were hosts. The Washington Award, which has been established by the latter society, "is to be presented annually to the engineer whose work in some instance or whose services in general have been noteworthy for their merit in promoting public good."

—

Guy M. Peterson has been made vice-president of the Cheney-Bigelow Wire Works, Springfield, Mass. He has been engaged in the realty business.

—

Emil Nelson has resigned as president of the Moulders Foundry Co., North Chelmsford, Mass., and has been succeeded by John H. Davis.

—

H. B. Swan, superintendent of foundries for the Cadillac Motor Car Co., Detroit, addressed the foundry study group in the College of Engineering and Commerce of the University of Cincinnati on Feb. 3. His subject was "Modern Developments of Foundry Practice."

—

R. S. Cochrane, metallurgist of the Surface Combustion Co., Toledo, Ohio, spoke on the "General Application of Gas Heat in Industry" at the monthly meeting of the Cincinnati Chapter of the American Society for Steel Treating on Feb. 8.

—

Charles E. Stone, since 1924 vice-president of the Interstate Drop Forge Co., Milwaukee, has been elected

president, succeeding C. R. Messinger, who is a member of the board of directors and also president of the Chain-Belt Co. Lamar S. Peregoy has been elected vice-president. C. C. Bremer, treasurer, and J. C. Merker, secretary, were re-elected. Directors are C. R. Messinger, W. C. Frye, J. W. Millspaugh, L. S. Peregoy, E. L. Wood and W. J. Nugent. Mr. Stone was purchasing agent and later assistant to the president of the Chain-Belt Co. prior to his association with the Interstate company, which is a member of a group of affiliated concerns, including the Sivyer Steel Casting Co., the Federal Malleable Co., and the Chain-Belt Co., Milwaukee, and the Nugent Steel Castings Co., Chicago.

—

H. E. Sheldon, president Allegheny Steel Co., Pittsburgh, is on a Pacific Coast tour. He is accompanied by W. F. Detweiler, general manager of the company.

—

V. W. Peterson is president and C. B. Mitchell is vice-president and treasurer of a new company that has purchased the plant and business of the Hannifin Mfg. Co., 621 South Kolmar Avenue, Chicago, manufacturer of air chucks, air-operated arbor presses, boring bars and other air-operated devices. The business will be continued under the old name. Mr. Peterson and Mr. Mitchell also control and operate the Sherman-Manson Mfg. Co., Chicago, manufacturer of tubular steel products.

—

George W. Page, associated for 30 years with the W. A. Jones Foundry & Machine Co., Chicago, and now director of purchases for that company, has been elected vice-president to succeed the late Thomas A. Jones. William F. Coleman has been appointed treasurer. He has been identified with the company for a number of years and will continue to serve also as general superintendent. Warren G. Jones continues as president and general manager and J. A. Sizer remains as secretary.

—

Donald M. Ryerson has been elected chairman of the board of directors of Joseph T. Ryerson & Son, Inc., Chicago, succeeding his father, the late Edward L. Ryerson. The new chairman has been active in the management of the company, formerly having been vice-president and general manager. Joseph T. Ryerson continues as president and treasurer and Edward L. Ryerson, also a son of the late chairman, has been made general manager and will continue also in his position as vice-president. Everett D. Graff is a newly elected vice-president and G. G. Moody and E. L. Hartig remain as vice-presidents.

—

A. P. Afanassieff has been appointed assistant to the president of the Shaw-Crane-Putnam Machine Co., Inc., 100 East Forty-second Street, New York, according to an announcement by F. J. Baumis, president. Henry Huss has been appointed sales manager of the Putnam division of the same company.

—

P. J. Flaherty, president and general manager of the Johnson Bronze Co., New Castle, Pa., has purchased the Johnson interests in that company, and will continue with the company in his same capacity. No changes in operation or personnel are planned.

—

A. B. Moyer, formerly assistant engineer for the Struthers-Wells Co., Warren, Pa., has been placed in charge of a new branch office which has been opened by the company at 332 South Michigan Avenue, Chicago.

—

H. B. Miller has been appointed Pittsburgh district manager for the Truscon Steel Co., Youngstown, succeeding Charles D. Loveland, recently appointed district manager in charge of the company's office at Newark, N. J. Mr. Miller has been assistant sales manager with headquarters in Youngstown.

—

H. H. Morgan, since 1904 connected with Robert W. Hunt Co., Chicago, engineer, has been appointed metallurgical engineer in charge of the rail and track fastening department, succeeding C. W. Gennet, Jr. Mr. Gennet has resigned to become associated with the Sperry Development Co. in connection with the Sperry transverse fissure detector. Mr. Morgan is a graduate mechanical engineer, and during the first 13 years of his employment with Hunt company he was directly connected with inspecting and testing work, being particularly active in the inspection and testing of rails, investigation of rail failures, and various tests of track fastenings. During the World War he was transferred to Washington to engage in inspection and testing of engineering materials and equipment for the American Expeditionary Forces. At the close of the war he was appointed district manager of the Pittsburgh district of Hunt company.

—

F. A. Lawler, formerly manager of the Chicago branch of the Crucible Steel Co. of America, has been appointed executive vice-president of the Ziv Steel & Wire Co., Chicago.

—

Bennett Chapple, director of publicity for the American Rolling Mill Co., Middletown, Ohio, has been elected a vice-president of the company in general charge of advertising and publicity programs and as a special representative. Other officials of the Armco organization who have been given this title during the last year include Weber Sebald, in general charge of commercial development; John B. Tytus, in charge of special construction engineering and special assistant to the general management; J. C. Miller, general representative of the company at Ashland, Ky.; D. Eppelsheimer, in charge of general engineering and construction problems and special assistant to the general management, and A. K. Lewis, who is vice-president of the Columbia Steel Co., and special representative of the company at Butler, Pa.

—

George T. Johnson has been elected third vice-president of the Buckeye Steel Castings Co., Columbus, Ohio, and will be in charge of sales and engineering. He was graduated from Cornell University in 1906 and has been identified with the manufacturing, engineering and sales departments of the Buckeye company since that time.

—

Frank A. Peck, vice-president of the Universal Crane Co. and the Thew Shovel Co., Cleveland, has been elected a director of the Manufacturers' Division of the American Road Builders' Association, in recognition of his work in contributing to the success of the 1926 Cleveland Road Show.

—

L. J. Jones has resigned as vice-president, secretary and a director of the Eastern Rolling Mill Co., Baltimore, and will leave shortly for a Mediterranean cruise.

—

J. King Hoyt, Jr., a member of A. Milne & Co., 741 Washington Street, New York, iron and steel merchants, sailed for Sweden on Feb. 4. He will visit iron and steel plants in Sweden and other countries on the Continent and at Sheffield, England.

—

B. H. Hale, Albany, N. Y., and J. A. Rumer, Chicago, have been appointed Eastern and Western sales managers, respectively, for the Ferro Enamel Supply Co., Cleveland.

—

E. M. Adams, first vice-president and general sales manager for the Inland Steel Co., Chicago, left Feb. 4 for a five weeks' vacation in Honolulu.

—

C. R. Lewis has been made executive vice-president, in addition to his duties as general manager of sales for the Standard Forgings Co., Chicago. A. C. Stockton, formerly vice-president and comptroller, has been elected vice-president, treasurer and secretary of the company.

—

E. C. Wells, president Roane Iron Co., Chattanooga, Tenn., has resigned on account of ill health, his retirement being effective immediately. He has been succeeded by Morrow Chamberlain, who has been secretary and treasurer. Charles T. Culbert, auditor of the company during the past two years, will take up the duties relinquished by Mr. Chamberlain.

# Machinery Markets and News of the Works

## UPTURN IN SALES VOLUME

### Machine Tool Business and Inquiries Show Decided Gain

### Santa Fe Railroad Issues Inquiry for 34 Items of Equipment—Large Buying by Mergenthaler Linotype Co.

MACHINE tool sales and inquiries have turned upward in the first week of February. Buying has been well apportioned among all consuming lines, although automobile companies probably have been the most active purchasers. However, the orders of the Mergenthaler Linotype Co., Brooklyn, totaling upward of $1,000,000 in the past two or three weeks, comprise one of the largest amounts placed by any one company outside the automobile field since the war. The Santa Fe Railroad has issued an inquiry for 34 items of shop equipment.

Orders booked during the past week or two have placed some machine tool manufacturers in the best position in several months. Inquiries are in good volume and lend encouragement to the prediction of some in the trade that a mounting scale of purchasing will be in evidence throughout February and March. Some machine tool companies report a heavy increase in the demand for repair parts, indicating that manufacturers generally are expanding their activities.

The automotive industry promises to yield much more business in the first half of this year than in the latter six months of 1927. Tools for which automobile companies are now inquiring total about $500,000.

Woodworking machinery is fairly active. The St. Marys Wheel & Spoke Co., St. Marys, Ohio, has bought 25 new and six rebuilt machines, and the Perfection Stove Co., Cleveland, is taking bids on 25 machines.

## New York

NEW YORK, Feb. 7.

THERE is a fair volume of inquiry for machine tools, but with the exception of some further purchasing by the Mergenthaler Linotype Co., Brooklyn, only a small number of purchases is reported. The Merganthaler list of purchases has been one of the largest since the war, totaling $1,000,000 to $1,200,000. In addition to the six turret lathes reported early in the year and about 20 engine lathes, of which 17 went to the Monarch Machine Tool Co. and three or more to the Hendey Machine Co., the Merganthaler company is understood to have closed on about 230 spindles of drills with Leland-Gifford Co. and 50 to 60 more with another maker. Its orders for milling machines total about $400,000, of which $250,000 worth was bought from one maker and $125,000 worth was distributed to four others. The Intertype Corporation, Brooklyn, is preparing additional production factilities and may be in the market for a few tools soon.

Machine tool builders have comfortably filled order books and in some instances are quoting slightly extended deliveries. One maker, quoting from seven to 15 weeks' has advanced prices about 10 per cent.

Recent purchases have included a 16 x 60-in. and a 20 x 72-in. lathe and a No. 2 Brown & Sharpe surface grinder by a California machine tool builder; an 8-in. rotary surface grinder by a Philadelphia company; an automatic grinder for thread milling machines by a New York City manufacturer, and a 42-in. boring and turning mill by a machine tool manufacturer in Cincinnati.

Plans are being arranged by Decorated Metal Mfg. Co., Sackett and Henry Streets, Brooklyn, for extensions and improvements in its six-story plant to cost close to $45,000. Slee & Bryson, 160 Montgomery Street, are architects.

A. C. and A. K. Roemermann, First National Bank Building, Mount Vernon, N. Y., architect, have plans for a two-story automobile service, repair and garage building, to cost approximately $100,000 with equipment.

General Motors Truck Co. and Yellow Coach Co., both operated as divisions of General Motors Corporation, Broadway and Fifty-seventh Street, New York, have leased seven-story building being erected at 211-25 West Sixty-first Street, totaling 140,000 sq. ft. floor space, and will centralize service and repair departments, as well as sales division, at that location.

Fairchild Aviation Corporation, 270 West Thirty-eighth Street, New York, is said to have plans for additions in its aircraft manufacturing plant at Farmingdale, L. I., to cost more than $50,000.

Westcott & Mapes, Inc., 233 Broadway, New York, architect and engineer, has plans for a 12-story terminal warehouse, with ice, cold storage and refrigerating departments, on block bounded by Eleventh and Thirteenth Avenues, Twenty-sixth and Twenty-seventh Streets, to cost about $7,500,000 with equipment.

General Bronze Corporation, recently formed to take over and consolidate John Polachek Bronze & Iron Co., Long Island City, and Renaissance Bronze & Iron Works, both at Long Island City, has concluded negotiations for purchase of the bronze and iron works of Tiffany Studios, Inc., Corona, L. I., with plant totaling about 2½ acres, specializing in architectural bronze and iron products, lighting fixtures, etc. New owner will maintain operations at Corona works.

Benjamin Stevens, Flatbush Avenue and Stevens Street, Brooklyn, has filed plans for a two-story automobile service, repair and garage building on Nostrand Avenue, to cost about $175,000 with equipment.

Columbia Air Liners, Inc., recently formed by Charles A. Levine, 233 Broadway, New York, is completing installation of plant at Long Island City, 100 x 100 ft., for manufacture of commercial and military airplanes, and parts.

Ossining Ice Co., South Highland Avenue, Ossining, N. Y., has work under way on a new plant to cost about $150,000 with machinery. Waldemar Mortensen, 405 Lexington Avenue, New York, is architect.

Universal Pipe & Radiator Co., 420 Lexington Avenue, New York, is arranging an expansion program, to include acquisition of other properties and manufacture of additional steel and iron products. It is purposed to increase capital from 400,000 to 3,000,000 shares of stock, no par value, at a special meeting Feb. 15, and to begin program immediately thereafter. Louis B. Ladoux is president.

Western Electric Co., 195 Broadway, New York, has awarded a general contract to Turner Construction Co., Graybar Building, for a one-story unit at its telephone apparatus and cable shops, Kearny, N. J., 97 x 348 ft., for by-products production, to cost in excess of $200,000 with equipment.

In connection with an expansion program to cost $22,000,000, Public Service Electric & Gas Co., Public Ser-

## The Crane Market

INQUIRIES for both electric overhead and locomotive cranes are numerous, but purchasing is still limited. The Public Service Production Co., Newark, N. J., which has been in the market for three large capacity overhead cranes is understood to have closed. The Franklin Lumber Co., Newark, has not yet closed on its two lumber handling cranes. There are a number of inquiries current for locomotive cranes, but users are slow to place orders.

In the Pittsburgh district the Westinghouse Electric & Mfg. Co. is inquiring for a 5-ton, 25-ft. 6-in. span, 1-motor overhead crane.

Among recent purchases are:

Dixie Construction Co., High Level, Ala., 125-ton, 60-ft. 3-in. span, overhead crane with 15-ton auxiliary from Niles Crane Corporation.

Koppers Construction Co., Pittsburgh, a 5-ton, 50-ft. span electric crane for New Haven, Conn., from Niles Crane Corporation.

Otis Elevator Co., Yonkers, N. Y., 1-ton, 2-motor, single I-beam crane reported purchased from Shepard Electric Crane & Hoist Co.

Commonwealth of Massachusetts, a 6-ton, single I-beam hand power crane through a local dealer.

State Line Generating Co., Hammond, Ind., 20-ton, 33-ft. 4½-in. span; 20-ton, 28-ft. 5½-in. span and 20-ton, 26-ft. 1¾-in. span, electric overhead cranes and a 4-motor, 27-ft. 7-in. span bucket crane from Whiting Corporation.

Chicago Garbage Disposal Plant, three 2-cu. yd. bucket cranes from an unnamed builder.

New Haven Gas Co., New Haven, Conn., 5-ton, 50-ft. span crane to handle a ¾-cu. yd. bucket from Niles Crane Corporation.

Penn Metal Co., Parkersburg, W. Va., two 3-ton underhung transfer cranes and one 3-ton, 2-motor electric hoist from Northern Engineering Works.

vice Terminal, Newark, plans construction of a steel tower transmission line from a power substation and switching plant at Roseland, on which work has been started, to Bushkill, Pa., about 45 miles, where connection will be made with system of Pennsylvania Power & Light Co., Allentown, Pa.; Roseland station will occupy a 40-acre tract, and will cost close to $5,000,000 with equipment. About $3,000,000 will be expended for other transmission lines in different parts of State. Power substation at Kearny will be increased and additional equipment provided, to cost more than $400,000.

British-American Metals Co., South Second Street and Clinton Avenue, Plainfield, N. J., manufacturer of brass and copper tubing, etc., has authorized rebuilding portion of plant destroyed by fire Jan. 29, with loss in excess of $400,000 including machinery. Casting and machine shops were not damaged; tube mill was one story, 200 x 300 ft., and will be replaced in same size.

Triplex Safety Glass Co. of North America, Hoboken Terminal Building, Hoboken, N. J., has leased property at Passaic, N. J., formerly used by Passaic Cotton Mills, and will remodel for production of non-shatterable windshields.

Scandinavia Belting Co., Charlotte, N. C., manufacturer of brake bands, belting, etc., has leased one-story building to be erected at 248-50 Central Avenue, Newark, for an Eastern factory branch and distributing plant. Local office now at 226 High Street.

Bigelow & Shanley, 24 Walnut Street, Newark, architects, have plans for a new multi-story automobile service, repair and garage building, to cost $200,000 with equipment.

Guardian Fence Co., 1125 Broad Street, Newark, manufacturer of wire fencing, etc., subsidiary of Igoe Brothers, 234 Poinier Street, has leased three-story building at 32-34 Austin Street and 19 Tichenor Lane, for a new plant.

Board of Education, Union, N. J., contemplates installation of manual training department in addition to high school on Morris Avenue to cost $300,000, for which plans will be drawn by Fred Elsasser, 845 Broad Street, Newark, architect.

Ochrome Valve Co., 17-23 West Sixtieth Street, New York, has been formed to manufacture poppet valves for automobiles and Diesel engines, still plugs of special material and other items. Plant is at Bayonne, N. J.

## Buffalo

BUFFALO, Feb. 6.

OFFICIALS of Savage Arms Corporation, Utica, N. Y., are organizing a company to take over electric refrigerator and affiliated branches and to carry out increased production in this line, including electric washing and ironing machines. A present subsidiary, known as J. Stevens Arms Co., with main plant at Chicopee Falls, Mass., will succeed to firearms division of parent company, with change in name to Savage-Stevens Arms Co. Production in latter line will be concentrated largely, it is said, at Chicopee Falls. Savage corporation will operate as a holding company for both interests.

Board of Education, Gowanda, N. Y., is considering installation of manual training equipment in a new high school, to cost $250,000, for which plans will be drawn by Edward Green & Sons, and Albert H. Hopkins, 1 Niagara Square, Buffalo, architects.

Lockport Light, Heat & Power Co., Lockport, N. Y., has secured permission to operate in Niagara and Olean Counties, and plans construction of new pipe lines for distribution of coke-oven gas secured from plant of Semet-Solvay Co., Tonawanda, N. Y., including line to Wrights Corner and Medina, to cost $334,000 with station equipment; and line to Olcott and vicinity to cost $136,400.

V. R. Decrow, 91 Walnut Street, Lockport, N. Y., and associates have formed Decrow Automotive Specialties, Inc., capitalized at $100,000, and contemplate establishment of local plant for manufacture of automobile equipment and devices. Earl E. Hoyt, 57 Locust Street, is also interested in organization.

Board of Education, Municipal Building, Rochester, N. Y., is asking bids on general contract until Feb. 23 for two-story Benjamin Franklin High School, to include manual training department, to cost $2,750,000. Gordon & Kaebler, Hiram Sibley Building, are architects.

Clinton Metallic Paint Co., Clinton, N. Y., has purchased mining plant and ore rights in this section formerly operated by late C. A. Borst. Negotiations have also been concluded for acquisition of deposit of hematite ores in this same district, heretofore held by Franklin Iron Mfg. Co. New owner is planning development and operation of properties for raw material supply, and will increase output of metallic paints.

Plans are now under way for rebuilding foundry of Otis-Sawyer Co., Oswego, N. Y., recently destroyed by fire, with a loss estimated at $40,000.

Fabrication of steel has been started in new plant of Leach Steel Corporation, Adele Street, Rochester. Main building is 60 x 200 ft., with shop 30 x 100 ft.

## Philadelphia

PHILADELPHIA, Feb. 6.

BIDS have been asked on general contract by Norton Co., Worcester, Mass., manufacturer of grinding wheels, etc., for a two-story and basement factory branch and distributing plant, 57 x 100 ft., at Stenton and Louden Streets, Philadelphia, to cost more than $50,000 with equipment. Local headquarters are at 3208 Market Street. Ballinger Co., 105 South Twelfth Street, is architect and engineer.

Philadelphia Rapid Transit Co., 810 Dauphin Street, Philadelphia, is planning construction of an automobile service, repair and garage building, with bus terminal facilities in vicinity of Broad Street and Olney Avenue, to cost $1,500,000 with equipment. A similar multi-story structure will be erected also on Locust Street. Company is arranging for sale of $5,000,000 preferred stock, fund to be used for cost of structures.

Bids will be received by Bureau of Supplies and Accounts, Navy Department, Washington, until Feb. 14, for 320 pneumatic hose clamps and 1350 pneumatic hose couplings for Philadelphia Navy Yard, schedule 8416.

Harry L. Hussman Refrigerator Co., North Broadway, St. Louis, manufacturer of domestic refrigerators, freezers, etc., has acquired plant of Keystone Screw Co., Yardley, Pa., for new Eastern works. Existing plant consists of 35,000 sq. ft. of floor space on 17 acres and will be improved for immediate occupancy of new owner.

Philadelphia Rubber Works Co., Land Title Building, Philadelphia, has awarded general contract to Robert E. Lamb Co., 849 North Nineteenth Street, for a one-story addition to its mill at Oaks, Pa., 50 x 100 ft., to cost $40,000 with equipment.

Borough Council, Clayton, N. J., plans installation of electrically-operated pumping machinery and auxiliary

power equipment at municipal waterworks. Fund of $100,000, is being arranged for expansion.

Giant Mfg. Co., Council Bluffs, Iowa, manufacturer of playground equipment, has leased portion of former pottery of John Maddocks' Sons Co., Trenton, N. J., and will remodel for Eastern branch factory, to specialize in merry-go-rounds and kindred apparatus.

Board of Public Works, Camden, N. J., William D. Sayrs, Jr., director, will soon ask bids for four pumping plants for municipal waterworks, with capacity of about 5,000,000 gal. per day, to cost close to $100,000.

Bartol Research Foundation, care of Dr. Howard McClenahan, Franklin Institute, 15 South Seventeenth Street, Philadelphia, has plans for a two-story engineering and laboratory building on Swarthmore College campus, Swarthmore, Pa., to cost about $150,000. John T. Windrim, Commonwealth Building, is architect.

Harry Burgin, 4608 Salmon Street, Philadelphia, and associates have organized Bridesburg Foundry Co., with capital of $50,000, and plan operation of works in Bridesburg district for production of iron castings, dies and kindred products. George Elliott, 4817 Leiper Street, is also interested in new enterprise.

American Assembling Machine Co., Easton, Pa., is arranging for establishment of local plant for mechanical parts production and assembling.

Pennsylvania Water & Power Co., Holtwood, Pa., is disposing of bond issue of $6,000,000, portion of proceeds to be used for expansion. Company is affiliated with Consolidated Gas, Electric Light & Power Co., Baltimore, and has plans for a hydroelectric power development on Susquehanna River, south of its present station at Holtwood.

Harry A. Whartenby, Inc., Philadelphia, has been chartered under State laws, with capital of $50,000, to take over and expand structural steel and iron business of Harry A. Whartenby, Fulton Building. New company will manufacture line of ornamental iron and steel products and other metal goods.

School District of Upper Darby Township, Upper Darby, Pa., is considering installation of manual training equipment in new junior high school to cost $700,000, for which plans will be drawn by Heacock & Hokanson, 1211 Chestnut Street, Philadelphia, architects.

Gannett, Seelye & Fleming, Inc., Harrisburg, Pa., engineer, operating public utility properties, has acquired plant and system of Elizabethtown & Marietta Gas Co., Elizabethtown, Pa. Plans are under advisement for expansion, including pipe line construction.

Moltrup Steel Products Co., Beaver Falls, Pa., maker of cold drawn, milled and ground specialties, has discontinued connection with Henry Stewart & Co., Drexel Building, Philadelphia, and opened a branch office at 617 Widener Building. Russell E. Crank is district sales manager.

Briscoe Mfg. Co., 725 Walnut Street, Lebanon, Pa., has been organized to manufacture patented flexible coupling and do a general machine and jobbing business. Factory is completed and company expects to be in operation soon.

## Chicago

CHICAGO, Feb. 6.

AN additional inquiry for 34 tools to the list of the Santa Fe Railroad is the feature of this market. There is some doubt in regard to the report that the Studebaker Corporation, South Bend, Ind., will revive a list of experimental department tools. The Nash Motors Co., Kenosha, Wis., is purchasing tools for installation where production methods can be improved. The upward swing in sales late in January has been carried into February. Orders received, however, are scattered. New inquiry, which comes from widely diversified sources, is growing. Sales reported include a 25-in. x 20-ft. lathe, a 3½-ft. radial drill and a 14-in. tool room lathe.

*Additions to Santa Fe List:*

One portable crane.
One flanging clamp.
One 84-in. guide bar grinder.
Two 90-in. wheel lathes.
One 1500-lb. steam hammer.
One 8-in. cold saw.
One 24-in. upright drill.
One 14-in. x 6-ft. portable lathe.
One 30-in. x 16-ft. heavy-duty engine lathe.
One Niles, or equivalent, 90-in. locomotive truing machine.
One Hendey, or equivalent, 20-in. x 12-ft. heavy-duty engine lathe.
One Whitney, or equivalent, 20-in. x 2½-in. single wet tool grinder.
One 20-in. x 8-ft. heavy-duty engine lathe.
One 24-in. heavy-duty shaper.
Two Lucas No. 33, or equivalent, horizontal boring machines.
One Cincinnati No. 4, or equivalent, milling machine.
One 20-in. x 6-ft. brass turret lathe.
One 54-in. guard-wheel, tire-turning lathe.
One 90-in. driving wheel lathe.
Two 18-in. x 10-ft. engine lathes.
One 36-in. x 10-ft. engine lathe.
One 3½-ft. and one 4½-ft. radial drills.
One 20-in. drill press.
One Micro grinder.
One 2-in. double-head bolt cutter.
One 75-ton hydraulic press.
One 1¼-in. bolt cutter.
One 50-ton hydraulic press.
One 10-in. x 36-in. grinder.
One 39-in. crank planer.

Plans for merger of Jefferson Electric Mfg. Co., Chicago, with Chicago Fuse Mfg. Co. have been announced by John A. Bennan, president of both companies. Consolidated company will be known as Chicago-Jefferson Fuse & Electric Co. and will have an authorized capitalization of 120,000 shares of no par capital stock. Exchange of stock will be made on a share for share basis.

Hannifin Mfg. Co., 621 Kolmar Avenue, Chicago, manufacturer of machine tools, will build a two-story addition to provide 25,000 sq. ft. of floor space.

The Dominion Electric Co., Minneapolis, Minn., will build a shop addition to cost $25,000.

Mattoon Engine Works, 120 North Fourteenth Street, Mattoon, Ill., has been organized to succeed Chuse Engine & Mfg. Co. It will continue manufacture of steam engines in plant of former company and is prepared to carry out old contracts.

West Side Metal & Roofing Co., 2917 South La Salle Street, Chicago, has asked bids on general contract for a three-story addition, including improvements in present plant, to cost $150,000 with equipment. Lowenberg & Lowenberg, 111 West Monroe Street, are architects.

Rapid Roller Co., 800 Austin Avenue, Chicago, manufacturer of printers' rollers, etc., will proceed with erection of new three-story plant, 100 x 200 ft., to cost more than $250,000, instead of smaller sum. Present plant will be removed to new location. Schmid & Ryan, 77 West Washington Street, are architects.

Samuel Olsen & Co., 2418 Bloomingdale Avenue, Chicago, manufacturer of conveying machinery, etc., has asked bids on general contract for a one and two-story addition, 135 x 250 ft., to cost approximately $150,000 with equipment. Waller Co., 510 North Dearborn Street, is architect and engineer.

Great Northern Railway Co., Railroad Building, St. Paul, Minn., is considering extensions and improvements in its terminal and locomotive shops at Grand Forks, N. D., including addition to engine house, additional machine repair shops, two 100,000-gal. capacity water tanks, and other facilities, to cost in excess of $500,000. R. W. Davis is chief engineer.

City Council, Centralia, Ill., is considering installation of a municipal electric light and power plant, to cost more than $50,000 with equipment.

Davenport Cement Co., Davenport, Iowa, J. R. Lane, president, is said to be planning early construction of initial units of a cement mill at Buffalo, Iowa, to cost upward of $1,000,000 with machinery.

City Council, Great Falls, Mont., plans the installation of high duty pumping machinery to cost about $36,000, and other pumping and power equipment in connection with extensions and improvements in municipal waterworks, entire project to cost about $100,000. M. L. Morris is city engineer.

Great Northern Tool & Supply Co., Billings, Mont., J. C. O'Donell, manager, is considering plans for new factory branch for oil well equipment at Cody, Wyo., including machine shop and other structures.

William L. Hoffman, 718 West Sixty-third Street, Chicago, architect, has plans for a one-story automobile service and repair garage building, to cost $165,000 with equipment.

Chicago, Burlington & Quincy Railroad Co., 547 West Jackson Boulevard, Chicago, is reported planning extensions and improvements in its car and locomotive shops at Aurora, Ill., to cost $275,000 with equipment. A. W. Newton is chief engineer.

Key City Gas Co., Dubuque, Iowa, is considering construction of an addition to its artificial gas plant, to cost $200,000 with equipment; extensions will be made in pipe lines.

Beckwith Iron Works, 544 West Seventy-ninth Street, Chicago, has awarded general contract to Olson & Berg, 7957 Rhodes Avenue, for an addition, 40 x 180 ft., to cost $15,000 with equipment.

## New England

BOSTON, Feb. 6.

MACHINE tool sales, which showed signs of activity the past 10 days, have slumped. With some dealers business is as quiet as at any time in December and November. While actual sales fell off inquiries increased and the trade feels confident that a good business will develop late this month or early in March. Recent sales included a new 53-in. boring mill, new 18-in. x 25-ft. engine lathe, two used milling machines, an arbor press, a 24-in. x 14-ft. lathe, 28-in. upright drill and a new band saw to Massachusetts shops; a two-spindle drill and an upright drill, used tools, to Maine users, and miscellaneous smaller equipment to plants in various sections of New England. Several pieces of equipment, each costing $5,000 to $7,000, also were sold, but because of the possibility of additional orders from these buyers, sellers are withholding details. The local trade expects that the General Electric Co., Pittsfield, Mass., will shortly close on several large machines.

Central Maine Power Co. contemplates a hydroelectric power development at Bingham, Me.

Pattern shop of Gibby Foundry Co., Condor Street, East Boston, valued at $25,000 and patterns valued at $75,000 were recently destroyed by fire. It is planned to rebuild.

Parker Wire Goods Co., Worcester, Mass., has acquired Stephen Richard Co., Inc., Southbridge, Mass., cutlery. It is planned to continue manufacture of cutlery, but to establish sales and shipping departments in Worcester.

Saco-Lowell Shops, Boston, textile machinery, will move its Lowell Machine Shop, Lowell, Mass., to its plant at Biddeford, Me. Lowell plant manufactures minor lines of cotton machinery, Bradford, worsted and spun silk machinery, while the Biddeford plant is devoted to spinning, roving and twister equipment. Kitson Machine Shop, Lowell, opening and picking machinery is not affected by this move. Company also operates a card and drawing machinery plant at Newton Upper Falls, Mass.

Mechanical Devices, Inc., with a capitalization of 700,000 shares of 7 per cent preferred stock, par $10, and 60,000 shares of common stock, par $5, has organized under Massachusetts laws to manufacture cotter pins, nuts, bolts, screws, etc., and to do engineering work. It will use part of Victory plant, Squantum, Quincy, Mass., which was operated during war by Bethlehem Shipbuilding Co., Ltd.

Contract has been let by Taunton-New Bedford Copper Co., New Bedford, Mass., to J. E. Cox Co., North Main Street, Fall River, Mass., for extensions and improvements in two-story plant, to cost more than $30,000.

Northern Rubber Co., Ballardvale, Mass., has acquired portion of local plant of Ballardvale Mills Co., consisting of two factory units on 2¾ acres, and will remodel for a new mill. It is purposed to begin production in March.

New England Public Service Co., Worcester, Mass., has purchased plant and properties of Utilities Power Co., Bristol, N. H., including a local power dam and hydroelectric power station and is planning to increase height of dam for expansion in generating capacity. Extensions will be made in transmission lines.

Public Building Department, City of Boston, City Hall Annex, has plans for a new power house at jail on Charles Street, to cost $100,000 with equipment. Bids will be asked by Desmond & Lord, 1 Beacon Street, architects. Department is also planning erection of a municipal automobile service, repair and garage building, to cost in excess of $200,000 with equipment.

Indiana Truck Corporation of Massachusetts, 54 Carleton Street, Cambridge, Mass., a subsidiary of Indiana Truck Corporation, Marion, Ind., has acquired building adjoining present factory branch, and will use for extensions.

Worcester Wire Works, Inc., 230 Ludlow Street, Worcester, Mass., has awarded a general contract to Bylund Brothers, Wallace Avenue, Auburn, Mass., for a two-story addition, 67 x 200 ft., to cost about $35,000.

Rhode Island Carboard Co., Pawtucket, R. I., has acquired through its subsidiary, Emerson Realty Corporation, plant of Home Bleach & Dye Works, Attleboro, Mass., and will remodel for new plant. Entire project, including purchase, is reported to cost more than $500,000. Lowell Emerson is president.

Coffin Valve Co., 20 Tolman Street, Boston, manufacturer of heavy gate valves, is said to be completing plans for rebuilding portion of plant recently destroyed by fire, with loss of more than $75,000 including equipment.

Kingsbury Machine Co., Keene, N. H., has changed its name to Kingsbury Machine Tool Corporation.

## Pittsburgh

PITTSBURGH, Feb. 6.

MACHINE tool sales are dull, but inquiries are fairly active. A few dealers have succeeded in closing some old inquiries.

Locomotive Stoker Co., Pittsburgh, a subsidiary of Westinghouse Airbrake Co., has been sold to Standard Stoker Co., New York, which has plant at Erie, Pa., and will be known as Pittsburgh plant of Standard Stoker Co., Inc. Locomotive Stoker Co. will be dissolved after servicing of numerous stokers now in use on locomotives and coal pushers is completed.

Chromium Co. of Pittsburgh, has been incorporated under Pennsylvania laws and is engaged in chromium plating in a plant at 400 Lexington Avenue. Offices are at 1005 Park Building. Norman Allderdice is president and Dr. R. J. Piersol, vice-president and consultant.

Plans are under consideration by Baltimore & Ohio Railroad Co., Baltimore, for rebuilding engine house and adjoining machine shops at its repair works, Connellsville, Pa., destroyed by fire Feb. 2, with loss in excess of $400,000, including equipment.

United States Engineers, Huntington, W. Va., are asking bids until Feb. 15 for a quantity of iron rivets, circular 137; until Feb. 13 for riveted spiral pipe, circular 135; until Feb. 16 for 1540 lb. steel pipe lining, 1875 lb. steel swing chain, and two sprocket chains, circular 136.

W. T. Carson Battery Co., Huntington, W. Va., plans rebuilding its service, repair and garage building at 1331 Third Avenue, recently destroyed by fire, with loss close to $100,000 including equipment.

Hubbard & Co., Granite Building, Pittsburgh, manufacturers of heavy hardware products, plan rebuilding machine shop destroyed by fire Jan. 31, with loss estimated at $21,000 including equipment.

Board of Education, Fulton Building, Pittsburgh, is arranging an early call for bids on general contract for a two-story and basement trade and vocational school, to cost $150,000 with equipment. E. B. Lee, Chamber of Commerce Building, is architect.

Philip Palmgreen, McKeesport, Pa., and associates, have formed Palmgreen Mfg. Co., to operate local plant for manufacture of tools and machinery. Ben A. Dahlin, Versailles, Pa., will be an official of new company.

## South Atlantic States

BALTIMORE, Feb. 6.

BIDS will be asked soon for a one-story addition to plant of Davison Chemical Co., Garrett Building, Baltimore, manufacturer of acids, fertilizers, etc., Curtis Bay district, to cost in excess of $400,000 with machinery. A. Benzon is company engineer.

Newman Machine Co., Jackson Street, Greensboro, N. C., manufacturer of wood-working machinery and tools, has plans for a one-story addition, 60 x 135 ft., to cost about $80,000 with equipment. Extension will provide total floor space of more than 42,000 sq. ft. Later it is purposed to build a one-story foundry addition. Company recently increased capital to $500,000 for expansion.

Board of Commissioners, District Building, Washington, is asking bids until Feb. 20 for foundry and forge shop equipment for McKinley Technical High School.

Maryland Clay Products Co., Frostburg, Md., recently formed by J. Glenn Beall, Frostburg, and associates, has plans for new plant for manufacture of vitrified sewer pipe, to cost in excess of $200,000 with machinery. Site has been selected along line of Western Maryland Railway. Ervin I. Prichard, Frostburg, is also interested in organization.

Capital Granite Co., Columbia, S. C., recently organized with capital of $300,000 by Robert G. Lassiter, Oxford, N. C., and associates, has plans for a new rock-crushing plant in vicinity of Blairs, S. C., to have capacity of 3000 tons per day. D. E. Saunders, Columbia, is secretary.

Crown Cork & Seal Co., 1611 Guilford Avenue, Baltimore, manufacturer of metal bottle caps, capping machinery, etc., will make extensions and improvements in three-story plant to cost $50,000. L. R. White, Hearst Tower Building, is architect.

J. A. Jones Construction Co., Realty Building, Charlotte, N. C., has filed plans for four-story automobile service, repair and garage building, to cost upward of $200,000 with equipment.

Bureau of Supplies and Accounts, Navy Department,

Washington, is asking bids until Feb. 14 for six motor-generator sets and spare parts for navy yard at Anacostia, schedule 8451; for 6691 lb. rough machined forged shafts for Brooklyn Navy Yard, schedule 8463; for wire, brass, copper, bronze and steel for Eastern and Western yards, schedule 8420; for quantity of brass, copper and steel burrs, rivets and washers for Eastern and Western yards, schedule 8423; and for quantity of machine and wood screws and nuts for Philadelphia yard, schedule 8404.

Baker County Power Co., Moultrie, Ga., is reported planning installation of a local power house, using Diesel engine units. Company was recently acquired by W. B. Foshay Co., Foshay Building, Minneapolis, Minn.

Edisto Public Service Co., Denmark, S. C., will make extensions in power facilities and transmission lines in Allendale section, where electric light and water properties recently were acquired.

Bureau of Yards and Docks, Navy Department, Washington, is asking bids (closing date not stated) for refrigerating equipment for marine barracks, Mare Island, Cal., including motor-driven compressor, motor-driven brine pump, control equipment, switchboard apparatus, etc., specification 5523.

Dreamland-on-the-Bay, Inc., Love Point, Md., C. W. Elrod, general manager, is considering construction of steam-operated electric power plant, to cost more than $60,000 with equipment. Application has been made for permission to build transmission lines for service at Chester, Stevensville and vicinity.

M. H. Elder Culvert & Machinery Co., Atlanta, Ga., has been formed by merger of Southern Supply Co. and M. H. Elder Co., both of Atlanta, and will carry line of products of Galion Iron Works, Galion, Ohio, and other makers of road building and construction supplies. Warehouses have been opened at 653 Whitehall Street, Atlanta, and company will operate in Georgia, Florida, South Carolina and Alabama.

## Milwaukee

MILWAUKEE, Feb. 6.

WHILE machine tool sales have not yet reached a substantial volume, conditions in the trade are becoming more satisfactory and give indications of a steady increase. Inquiry is active, with automotive industries showing greater interest than for the past six months. Due largely to the greater activity of these industries, Milwaukee employment has increased 1000 men in the past thirty days.

Allis-Chalmers Mfg. Co., Milwaukee, has placed orders amounting to $100,000 for new production machinery for its tractor division and is in market for additional miscellaneous items.

Modine Mfg. Co., Seventeenth and Racine Streets, Racine, Wis., manufacturer of radiators and cooling systems for internal combustion engines, contemplates construction of an addition costing about $100,000 complete. Bids will be taken about March 15.

MacWhyte Co., Kenosha, Wis., manufacturer of wire rope, cable, etc., has placed general contract with John Zoubek, 4042 Seventh Street, local, for erection of a mill addition to cost about $25,000.

Quality Aluminum Casting Co., Lincoln Avenue, Waukesha, Wis., has contracted with Paul Gierke, 816 Lincoln Avenue, local, for construction of a brick and steel foundry addition, 40 x 200 ft.

J. E. Fuller and associates, Rockford, Ill., have purchased former plant and property of Acme Brass & Metal Works, Waupaca, Wis., with patent rights to Jorgenson primer for gas engines, and will resume operation upon completion of alterations and replacements. A gray iron foundry unit will be established and a general line of automotive and power farm machinery specialties will be manufactured.

George S. Parker Co., 219 Court Street, Janesville, Wis., manufacturer of fountain pens and metal magazine pencils, is holding in abeyance plans by F. A. Carpenter, architect, Brown Building, Rockford, Ill., for an addition estimated to cost $150,000. Work may be undertaken later in year.

Gold Medal Camp Furniture Co., Racine, Wis., has acquired plant and equipment of R. B. Lang Mfg. Co., 1800 Holborn Avenue, Racine, at assignee's sale for $14,900, and will use it as an additional production unit for metal parts. Lang company manufactured hardware specialties and metal stampings and has been in liquidation following death of its founder and president, R. B. Lang. Some alterations will be made by Gold Metal company, with replacement of obsolete equipment.

Nekoosa Motor & Machine Co., Nekoosa, Wis., has plans by Frank J. Henry, architect, Wisconsin Rapids, Wis., for a new machine shop costing about $25,000 with equipment. Work will begin March 1.

Gedemer Tool & Machine Co., 1920 Taylor Avenue, Racine, Wis., is preparing to build a new unit at a cost of about $25,000.

Atlas Engineering Co., 3038 Galena Street, Milwaukee, which recently sold its mortar and plaster mixer department to Chain Belt Co., Milwaukee, has changed its name to Zimmermann Engineering Co. and will continue to manufacture other lines of mechanical specialties. H. W. Zimmermann is president.

Kurz-Root Co., Appleton, Wis., manufacturer of electrical appliances and specialties, sustained a loss of $15,000 by fire on Feb. 2. Plans are being made for erection and equipment of a new plant.

Armstrong Foundry Co., 1530 Junction Avenue, Racine, Wis., manufacturer of gray iron castings, has plans by J. Mandor Matson, local architect, for a brick and steel addition, 70 x 80 ft. Work will begin about March 1.

## Cincinnati

CINCINNATI, Feb. 6.

SALES turned sharply upward the past week, with the result that machine tool builders are in the best position in several months, so far as orders on hand are concerned. Buying has been well apportioned among all consuming lines, although automobile companies probably have been the most active purchasers. Inquiries have been good, and manufacturers are of the opinion that bookings during February and March will be of liberal volume. The automotive industry affords promise of yielding substantial business through the first half of 1928, pending transactions indicating that expenditures in the Detroit district will approximate at least $500,000, and possibly considerably more.

Railroads are beginning to come into the market. The Santa Fe has issued a list covering its annual requirements, while the Southern has placed an order for three large shapers. The Norberg Mfg. Co., Milwaukee, has bought a 62-in. heavy boring mill and a 73-in. standard boring mill. Many machine tool companies report a heavy increase in demand for repair parts. Electrical tool manufacturers state that sales have been fairly good in the past 30 days, and prospects are favorable for active business in the first six months of the year. Purchases by companies in the automobile industry have contributed much to order books.

Plans are being considered by Armstrong-Johnston Mfg. Co., foot of West First Avenue, Columbus, Ohio, manufacturer of truck and cab bodies, for a two-story addition to cost about $40,000 with equipment.

Ohlen-Bishop Co., Columbus, Ohio, manufacturer of saws, saw frames, etc., contemplates rebuilding portion of plant destroyed by fire Jan. 29, with loss in excess of $100,000 with machinery.

I. F. Weber & Co., Commercial Building, Dayton, Ohio, engineers and contractors, have plans for a three-story automobile service, repair and garage building to cost $250,000.

Air Corps, Material Division, Wright Field, Dayton, Ohio, is asking bids until Feb. 20 for 65 spinner assemblies, split hub propellers, circular 215; until Feb. 13 for inverted Liberty engine spare parts, circular 199; until Feb. 13 for 30 sets bomb rack installation parts, circular 207.

W. M. Dean Marble Co., South Garden Street, Columbia, Tenn., will begin a one-story addition, 106 x 145 ft., with installation of additional machinery. Capital has recently been increased to $75,000 for expansion.

Diamond Ice Co., Knoxville, Tenn., operated by Standard Ice Co., is considering erection of a one-story plant to cost close to $200,000 with equipment.

Tennessee Electric Power Co., Chattanooga, Tenn., will make extensions and improvements at Maryville, Tenn., and vicinity, including construction of transmission lines, additional substation equipment, etc. O. T. Huddleston is local manager.

Steel Products Engineering Co., Springfield, Ohio, plans installation of additional machinery.

Advance Bag & Paper Co., Inc., Middletown, Ohio, has arranged for a bond issue of $3,750,000, a portion of proceeds to be used for expansion. Work is under way on a new mill at Hodge, La., for manufacture of kraft paper products,

containers, etc., to cost upwards of $1,500,000 with machinery.

Ovens, power equipment, conveying and other machinery will be installed in one-story and basement plant, 70 x 200 ft., to be erected by Blue Bird Baking Co., Horton Street, Dayton, Ohio, to cost about $85,000 with equipment.

Cincinnati Gas & Electric Co., Cincinnati, is concluding negotiations for a merger with Columbia Power Co. and Union Gas & Electric Corporation, under first noted name. An expansion program will be carried out, including transmission line construction.

Monroe Brass & Wire Co., Traction Building, Cincinnati, has been appointed representative in this territory for Fitzsimons Co., Youngstown, Ohio, manufacturer of cold drawn steel.

## Indiana

INDIANAPOLIS, Feb. 6.

CONTRACT has been let by Bendix Brake Co., Bendix Drive, South Bend, Ind., manufacturer of automobile brakes and kindred equipment, to H. G. Christman & Co., 306 South Notre Dame Avenue, for a one-story addition, 100 x 120 ft., to cost about $30,000 with equipment.

Indiana Service Corporation, Fort Wayne, Ind., is arranging bond issue of $5,000,000, portion of fund to be used for extensions and improvements in power plants and transmission lines.

Delco-Remy Corporation, Anderson, Ind., manufacturer of automobile electric lighting and starting equipment, is completing plans for an addition to be used largely for production of storage batteries, to cost in excess of $75,000.

Interstate Public Service Corporation, Indianapolis, has applied for permission to issue bonds in amount of $12,554,000, portion of proceeds to be used for expansion and improvements in electric light and power properties, including transmission lines.

United States Corrugated Fibre Box Co., 1315 Martindale Avenue, Indianapolis, plans early installation of machinery in new one-story plant, 125 x 300 ft., at Dayton, Ohio, on which work is under way. It is reported to cost upward of $100,000 with equipment. Charles E. Bacon, Odd Fellows Building, is architect.

City Council, Elkhart, Ind., plans early call for bids for an elevated steel water tank and tower with capacity of 500,000 gal., for municipal water department. Fred Anderson is city engineer.

Board of Education, Mishawaka, Ind., contemplates installation of manual training department in a two-story and basement junior high and grade school to cost $235,000, for which superstructure will soon begin. Hamilton, Fellows & Wilkinson, Tower Court, Chicago, are architects.

Baker Ice Machine Co., Omaha, Neb., manufacturer of ice and refrigerating machinery, has taken over building of Swartz Electric Co., West Sixteenth Street, recently acquired, and will establish new factory branch and distributing plant.

## Cleveland

CLEVELAND, Feb. 6.

MACHINE tool sales and inquiries gained the past week following a slowing down during the previous week. A local manufacturer purchased eight small turret lathes from a Cleveland builder for use in making shock absorbers for automobiles. A local company purchased four 16-in. engine lathes and another two 10-ft. heavy-duty squaring shears. A Cleveland manufacturer sold five small turret lathes to an Eastern manufacturer of brass goods.

A fair volume of business is being done in the Detroit territory. Woodworking machinery is fairly active. The St. Marys Wheel & Spoke Co., St. Marys, Ohio, which is adding the manufacture of furniture to its other products, has purchased 45 new wood-working machines and six rebuilt machines. The Perfection Stove Co., Cleveland, is taking estimates on about 25 wood-working machines.

Butler Mfg. Co., 1812 East Twenty-fourth Street, Cleveland, manufacturer of street-cleaning machinery, sweepers, has leased new factory to be erected at Akron, Ohio, by Akron, Canton & Youngstown Railway Co.

National Sanitary Co., Salem, Ohio, manufacturer of sanitary ware, contemplates rebuilding portion of plant destroyed by fire Jan. 29, with loss reported in excess of $300,000 including equipment.

B. J. Long, 17712 Riverway Avenue, Cleveland, has filed plans for a one-story machine shop, 45 x 115 ft., to cost about $30,000 with equipment.

Northern Ohio Power & Light Co., Akron, Ohio, is arranging an expansion and improvement program to cost $1,600,000 for Akron district, including completion of power substation on Beach Street, cost $150,000; completion of new power substation at South Akron, $125,000; improvements in downtown heating plant and system, $248,000; extension in transmission lines, new power substations at Fairlawn, Kent, Lake Junction and vicinity and miscellaneous work.

Paterson-Leitch Co., 900 East Sixty-ninth Street, Cleveland, operating a structural steel fabricating plant, has filed plans for a one-story addition, 70 x 200 ft., to cost about $30,000. A 10-ton traveling crane and other handling equipment will be installed.

Canfield Oil Co., 3216 East Fifty-fifth Street, Cleveland, is considering extensions and improvements in its refinery, including installation of equipment for modernizing unit for handling crude oil.

Plant of Perkins Structural Steel Co., Wooster, Ohio, together with equipment, tools, machinery, etc., will be sold at public auction Feb. 14.

## St. Louis

ST. LOUIS, Feb. 6.

PLANS are being considered by Central Hardware Co., 811 North Sixth Street, St. Louis, for a new multi-story storage and distributing plant, to cost $100,000 with equipment.

Alois Aufrichtag Copper & Sheet Iron Mfg. Co., 900 South Third Street, St. Louis, has begun superstructure for a new one-story plant, 80 x 240 ft., with extension, 30 x 100 ft., for tool room and boiler house, entire project to cost upward of $60,000 with equipment.

Common Council, Blackwell, Okla., is considering installation of additional equipment in municipal light and power plant to cost $30,000.

St. Joseph Lead Co., 60 Wall Street, New York, is reported planning installation of a new concentrating mill at Mine La Motte, vicinity of Bonne Terre, Mo., to cost in excess of $200,000 with equipment.

Swallow Airplane Co., Wichita, Kan., Victor Roos, manager, is planning erection of three one-story units, 50 x 100 ft., 40 x 50 ft., and 28 x 65 ft., to cost more than $40,000 with equipment.

Western Refrigeration Co., Twenty-first and Campbell Streets, Kansas City, Mo., has taken out permits for two new local ice-manufacturing plants, to cost $160,000 and $150,000, respectively, with machinery.

Harding Glass Co., Fort Smith, Ark., manufacturer of sheet glass products, has plans for extensions and improvements, with installation of additional equipment, to cost about $150,000.

Budig Machine Co., McCook, Neb., plans one-story machine shop addition, 40 x 100 ft.

Nebraska Power Co., Seventeenth and Harney Streets, Omaha, Neb., is planning an expansion and improvement program to cost about $1,500,000, including extensions in power plants and transmission lines. New 60,000-volt line will be built from Omaha to Louisville, Neb.

Hill, Hubbell & Co., Tulsa, Okla., manufacturer of paints, etc., has plans for a new four-story factory, to cost $75,000 with equipment. W. D. Blakley, Tulsa, is architect.

American Eagle Aircraft Co., Thirteenth and Chestnut Streets, Kansas City, Mo., is said to be planning immediate installation of equipment in a local building for parts production and assembling.

General Motors Corporation, Detroit, has begun erection of a new branch at 2501 McGee Road, Kansas City, Mo., 170 x 230 ft., to cost about $115,000 with equipment. It will be used for service, repairs and sales of General Motor Truck Division, Yellow Truck & Coach Division, and Hertz Drivurself Stations, Inc.

National Milling Co., 2221 Front Street, Toledo, Ohio, plans construction of a new flour mill at North Kansas City, Mo., with machinery for initial capacity of 3000 bbl. per day, to cost close to $800,000 including equipment.

Spartan Aircraft Co., 2240 St. Louis Street, Tulsa, Okla., recently formed with capital of $1,000,000 by Willis C. Brown, contemplates establishment of local plant for manufacture of airplane parts and accessories.

## Detroit

DETROIT, Feb. 6.

CONTRACT has been let by Hupp Motor Car Co., 3641 East Milwaukee Street, Detroit, to Everitt-Winters, Inc., 1651 East Grand Boulevard, for a one-story addition to cost close to $30,000 with equipment.

Rich Steel Products Co., Battle Creek, Mich., has acquired 10 acres at Marshall, Mich., as site for new plant on which work will soon begin. It is reported to cost upward of $60,000 with equipment.

Oakland Motor Car Co., Oakland Avenue, Detroit, has awarded general contract to R. S. Knapp Co., Idaho and Fenkell Streets, Detroit, for a two-story addition for general engineering service, to cost $150,000 with equipment.

Consolidated Paper Co., Monroe, Mich., has awarded general contract to Owen-Ames-Kimball Co., Grand Rapids, Mich., for a four-story addition, primarily for manufacture of folding paper boxes and containers, to cost $300,000 with equipment.

Grand Rapids Gas Light Co., 47 Division Street, North, Grand Rapids, Mich., has plans for extensions and improvements in its artificial gas plant, to cost in excess of $250,000 with equipment. A booster gas pump and other machinery will be installed.

Department of Street Railways, Detroit, has taken out permit for a new automobile service, garage and repair building, to cost close to $100,000 with equipment.

Brunswick-Balke-Collender Co., 623 South Wabash Avenue, Chicago, manufacturer of talking machines, etc., has arranged for removal of its local plant to factory at Muskegon, Mich., where bulk of production will be concentrated. Muskegon plant will be extended.

Commercial Milling Co., 203 Randolph Street, Detroit, will soon take bids for an addition to its flour mill, to cost close to $85,000 with equipment. Fraser Co., 667 East Water Street, Milwaukee, is engineer.

Edwin Sterner Co., Flint, Mich., plumbing and heating equipment, has acquired former four-story plant unit of Hayes Wheel Co., totaling about 80,000 sq. ft. of floor space, and will remodel for expansion.

Hudson Motor Car Co., East Jefferson Avenue, Detroit, has filed plans for an addition, including improvements in portion of present plant, to cost $375,000 with equipment. Albert Kahn, Marquette Building, is architect and engineer.

Jaxon Steel Products Co., Jackson, Mich., division of General Motors Corporation, has begun production of stampings in portion of former plant of Kelsey-Hayes Wheel Corporation, and plans expansion in facilities and production to occupy entire works.

Detroit Boring Bar Co., 682 East Fort Street, Detroit, has been organized to manufacture boring bars, both of its own patented type and to customer specification. At present company is operating in plant of Waterman Corporation and is fully equipped.

Pontiac Sheet Metal & Roofing Co., Pontiac, Mich., has been organized to manufacture and install sheet metal building products and roofing. Plant is being erected and large part of equipment has been purchased.

## Gulf States

BIRMINGHAM, Feb. 6.

PLANS have been completed by St. Petersburg Cold Storage Co., St. Petersburg, Fla., for a four-story cold storage and refrigerating plant to cost about $275,000 with machinery. C. C. Whitaker, Bona Allen Building, Atlanta, Ga., is architect and engineer.

North Alabama Utilities Co., Sheffield, Ala., recently formed with capital of $100,000 by R. T. Simpson, Sheffield, and associates, has acquired local site for artificial gas plant to cost $65,000.

Thompson Can Co., Dallas, care of Industrial Department, Chamber of Commerce, Dallas, recently chartered with capital of $70,000 by E. Rowse Thompson and associates, is planning early erection of a new plant for manufacture of tin cans, to cost $50,000 with machinery, which will be of automatic type.

Gulf, Colorado & Santa Fe Railway Co., Union Depot, Galveston, Tex., is considering establishment of a new engine house with machine shops and repair facilities at San Angelo, Tex., to cost in excess of $90,000 with equipment. F. Merritt is chief engineer.

Daniel Japhet, State National Bank Building, Houston, Tex., contractor, has filed plans for a three-story automobile service, repair and garage building, 125 x 125 ft., to cost about $150,000 with equipment.

Gulf States Utilities Co., Beaumont, Tex., is said to have plans for extensions and improvements in local power house, as well as power stations at Hull, Jasper and Port Arthur, Tex., with installation of additional equipment. Company will also improve ice-manufacturing plants at Orange and Port Arthur, with additional machinery installation. Work is in progress on extensions in electric generating plant at Lake Charles, La., with additional equipment, and permit has been secured for new power substation at Beaumont.

Consumers' Ice & Coal Co., 945 Houston Avenue, Port Arthur, Tex., is contemplating an extension to its plant, with installation of additional equipment, to cost $50,000.

Atchison, Topeka & Santa Fe Railway Co., 80 East Jackson Boulevard, Chicago, has plans for a one-story locomotive repair shop, 200 x 500 ft., at Cleburne, Tex., to cost upward of $150,000 with machinery. C. F. W. Felt is chief engineer.

Chevrolet Motor Co., Flint, Mich., has awarded general contract to Hewitt Construction Co., Houston, Tex., for a new two-story assembling plant at Houston, where site, 100 x 250 ft., has been acquired, to cost close to $200,000 with equipment.

Board of Education, West Point, Miss., contemplates installation of manual training equipment in a two-story and basement high school to cost $160,000, for which bids will soon be called. George Mahan, Jr., City Savings' Bank Building, Memphis, Tenn., is architect.

Presidio Light & Ice Co., Presidio, Tex., has plans for extensions and improvements in local power house, including installation of a new turbo-generator unit and accessories, to cost $70,000 with other machinery.

Aransas Compress Co., Corpus Christi, Tex., has plans for an addition to cost more than $300,000 with machinery. A high density compress, boilers, and other equipment will be installed. Hardy & Curran, Nixon Building, are architects.

J. E. Mitchell, 600 South Sixth Street, St. Louis, is at head of a project to construct and operate a plant at Dallas, Tex., for manufacture of cotton ginning machinery and parts. Property has been secured and work on two-story factory will soon begin, to cost about $35,000 with equipment.

Roxana Petroleum Corporation, Shell Building, St. Louis, has acquired about 13 acres at Midland, Tex., and plans construction of storage and distributing plant to cost upward of $75,000.

City Council, Amarillo, Tex., is planning installation of electrically operated pumping machinery and auxiliary power equipment in connection with extensions and improvements in municipal waterworks. Entire project will cost $125,000. H. B. Jones is city engineer.

Board of Trustees, Prairie View State College, Prairie View, Tex., is planning construction of a one-story unit for a boys' trade and vocational school, to cost $150,000.

## Pacific Coast

SAN FRANCISCO, Feb. 1.

PLANS are being considered by Northwestern Pacific Railroad Co., San Francisco, for new power house at its car and locomotive shops. Work will be carried out in connection with an expansion program to cost more than $100,000.

California Rubber Products Co., Redwood City, Cal., manufacturer of hard rubber goods, has leased local plant and will remodel for a new factory. A department for refining gutta percha will be installed.

Fresno-Madera Ice Co., Seventh Street and Ventura Avenue, Fresno, Cal., is planning erection of a new plant, to cost about $100,000 with machinery.

Coast Counties Gas & Electric Co., Santa Cruz, Cal., has plans for a new equipment storage and distributing plant at Hollister, Cal., to cost about $35,000 with material-handling, repair and other equipment.

Metro-Goldwyn-Mayer Studios, Inc., Culver City, Cal., has plans for a one-story machine shop at its motion picture plant, 100 x 100 ft., to cost in excess of $40,000 with equipment. J. M. Haenke, Subway Terminal Building, Los Angeles, is architect.

Southern California Edison Co., Los Angeles, is disposing of preferred stock issue to cost close to $1,000,000, portion of proceeds to be used for extensions and improvements, including transmission line construction. Company has approved plans for expansion in Tulare district to cost about $325,000.

Lewis County Concrete Products Co., Chehalis, Wash., operated by Concrete Pipe Co., 134 Nickerson Street, Seattle, is arranging early erection of initial unit of a new local plant for production of concrete pipe and kindred specialties, to cost about $40,000 with equipment. Additional units will be built later. Thomas Stoy is local manager.

Puget Sound Power & Light Co., Seattle, is arranging an expansion and improvement program to cost $4,475,000. Work will include extensions in hydroelectric power plant on Baker River, to increase output by 27,000 hp., new power transmission line from Baker generating station to Seattle, substation equipment, etc. Company is operated by Stone & Webster, Inc., Boston.

San Joaquin Light & Power Corporation, Fresno, Cal., has approved plans for first unit of new power substation at Ashland and West Avenues, including additional transmission line, to cost about $90,000. Expansion will be carried out later, with ultimate cost of $250,000.

Apple Growers' Cold Storage Co., Watsonville, Cal., recently organized, has engaged Trine Service Corporation, Central National Bank Building, Oakland, Cal., architect and engineer, to prepare plans for a one-story cold storage and refrigerating plant, 300 x 500 ft., to cost approximately $250,000 with machinery.

Brown Instrument Co., Philadelphia, manufacturer of pyrometers, thermometers and other indicating and recording instruments, has opened new branch office at 537 Holbrook Street, San Francisco.

## Foreign

CONTRACT has been let by Soviet Metal Trust, Moscow, Russia, to Frank D. Chase, Inc., 720 North Michigan Boulevard, Chicago, engineer, for plans and erection supervision for a new foundry at site of former plant of Singer Mfg. Co., Podolsky, about 25 miles from Moscow. It will have capacity of 150 tons per day, approximately trebling present output, and will cost in excess of $750,000. Work is scheduled to begin this summer.

Stuart & Partners, 12 Berkeley Street, London, W. 1, general contractors, have secured award for a new beet sugar refinery at Brigg, Lincolnshire, England, for which plans were prepared by German interests. Unit is estimated to cost close to $1,000,000 with machinery. Information at the American Consulate, London, William L. Cooper, commercial attaché.

Terni-Societa per l'Industria e l'Elettricita, Rome, Italy, known as Terni, is disposing of a bond issue of $12,000,000 in the United States, portion of proceeds to be used for hydroelectric power development, including completion of plant now in course of construction to have initial output of 105,000 kw., and similar type station of Societa Elettrica dell' Alto Nera, a subsidiary, designed for capacity of 9000 kw. Extensions will be made in transmission lines and substations.

Etablissements Kuhlmann, Paris, France, manufacturer of industrial chemicals, etc., has arranged for increase in capital from 200,000,000 to 250,000,000 fr., and will soon dispose of a block of stock in United States, proceeds to be used primarily for expansion in synthetic nitrate works, including buildings and equipment.

Colombian Government Bureau of Information, 1440 Broadway, New York, has detailed information regarding equipment and materials to be purchased by Republic of Colombia, South America, for 1928 railroad, waterway and highway construction, including data on bids to be received by Senor Ministro de Obras Publicas, Bogota, Colombia. Purchases will aggregate $10,000,000, and will include steel rails, steel for bridges, locomotives, stone-crushing plants, road rollers, concrete mixers, steel wire and cable, dynamite, pipe barges, construction machinery and miscellaneous equipment. Abram Martinez is director of information bureau at New York.

American-Russian Chamber of Commerce, 143 West Fifty-seventh Street, New York, has information regarding enlargement of bicycle manufacturing plant at Kharkov, Russia, for which it is proposed to secure a fund from net profits of industries of the Ukraine.

## Canada

TORONTO, Feb. 6.

MACHINE tool sales are increasing, each week showing some improvement over the one preceding. Local builders and dealers are optimistic regarding the future and look for increased activity in early spring. In addition to the better domestic demand, there is general improvement in imports, especially in such lines as are not made in the Dominion, the United States benefiting considerably by this business. The automotive and mining industries are responsible for much of the current orders.

Bids are being received by F. A. Dallyn, 71 King Street West, Toronto, for following equipment required by water commissioners of Palmerston, Ont.: One direct-connected motor-driven centrifugal fire pump, capacity 850 gal. per min. with C. G. E. C. R. 7051-K1 automatic starting compensator with push button control, with no voltage and overload protection; gasoline-driven double-section centrifugal fire pump; and one deep water centrifugal multi-storage pump, capacity 350-400 gal. per min., total discharge head 185 ft. Latter pump is to be installed in a setting 100 ft. below surface, price to include installation in well; all prices f.o.b. Palmerston, tax included.

Bids will be called at once by Municipal Council, Lorretteville, Que., for construction of waterworks and sewage plants and systems on which work will start in spring. Estimated cost is $200,000.

Town Council, Pembroke, Ont., is in market for a 1400 gal. per min. pump for waterworks plant. E. G. R. Lewis is chairman of waterworks commission.

Bids will be called immediately by W. J. Walsh, architect, 304 Terminal Building, for a factory and office to cost $35,000, for F. T. Brooks, 28 Mary Street, Hamilton, Ont.

Dominion Truck Co., South Street, Kitchener, Ont., is having plans prepared by B. A. Jones, 14 Ontario Street South, for factory addition to cost $10,000.

Canadian Cartons, Ltd., 364 Richmond Street West, Toronto, will build a manufacturing plant at corner of Perth and Addison Avenues.

J. Robert Page, 18 Toronto Street, Toronto, has contract for erection of a two-story factory, 63 x 165 ft., to cost $50,000 for Art Craft Top & Trimming Co., 9 Bloor Street East. E. A. H. Menges, 40 Strathearn Boulevard, is architect.

Fire, Jan. 29, destroyed plant of Peterborough Lock Mfg. Co., Peterborough, Ont., with loss, including machinery, estimated at $75,000 to $100,000.

### Western Canada

Baynes & Horie, 846 Howe Street, Vancouver, B. C., have contract for $6,000 addition to plant of the Tait Pipe & Foundry Co., 4100 Nanaimo Street, Vancouver.

Bids are being received by S. E. O'Brien, secretary Dominion Department of Public Works, Ottawa, Ont., until Feb. 15, for construction of drydock and plant buildings at Esquimalt, B. C.

Northern Construction Co., and J. W. Stewart, 736 Granville Street, Vancouver, B. C., have been awarded contract by Alberta Wheat Pool, Calgary Alta., for construction of superstructure of a grain elevator at foot of Rupert Street, Vancouver, to cost $2,500,000. C. D. Howe & Co., Port Arthur, Ont., are architects.


## Growth of the Port of Montreal

**A splendidly illustrated and printed book on the development of the only world port receiving ocean steamships located 1000 miles from the ocean, has been put out by the Harbor Commissioners of Montreal. It consists of 80 pages, mostly pictorial, but with a large amount of data covering operations of the port and, particularly, showing its rapid growth. In the seasons of 1924, 1925 and 1926 an average of more than 1000 transatlantic vessels each year arrived in the port. The annual tonnage of these ships averages a little less than 4,000,000.**

## Branch Office Representatives of The Iron Age

### *Editorial*

Chicago, Otis Bldg.....R. A. Fiske
Pittsburgh, Park Bldg.....G. F. Tegan
Cleveland, 1362 Hanna Bldg.....F. L. Prentiss
Cincinnati, 408 Union Central Bldg.....Burnham Finney
Boston, Park Square Bldg.....Gerard Frazar
Washington, 536 Investment Bldg.....L. W. Moffett

### *Advertising*

Chicago, Otis Bldg.....F. S. Wayne
Pittsburgh, Park Bldg.....W. B. Robinson
Cleveland, 1362 Hanna Bldg.....Emerson Findley
Cincinnati, 408 Union Central Bldg.....D. G. Gardner
Boston, Park Square Bldg.....H. E. Barr
Philadelphia, 1402 Widener Bldg.....Charles Lundberg
Buffalo, 835 Ellicott Sq.....B. L. Herman
Detroit, 7338 Woodward Ave.....Peirce Lewis
Hartford, Conn., P. O. Box 81.....D. C. Warren
New Jersey, Hotel East Orange, East Orange, N. J., W. C. Sweetser
New York, 239 West Thirty-ninth St., W. C. Sweetser, Chester H. Ober
San Francisco, 320 Market St.....W. A. Douglass

# *The End of Another* SHORT RUN *on the* MULT-AU-MATIC

**Short Runs on the Mult-Au-Matic? Certainly!**

**Certainly plus a good big saving.**

| | | |
|---|---|---|
| 110 Gears | 19¾ | hours saved |
| 54 Pressure Plates | 23½ | hours saved |
| 54 Friction Covers | 21¼ | hours saved |
| 100 Scroll Rings | 38¼ | hours saved |
| 78 Cam Blanks | 17 | hours saved |
| 120 12-inch Gear Hubs | 61 | hours saved |

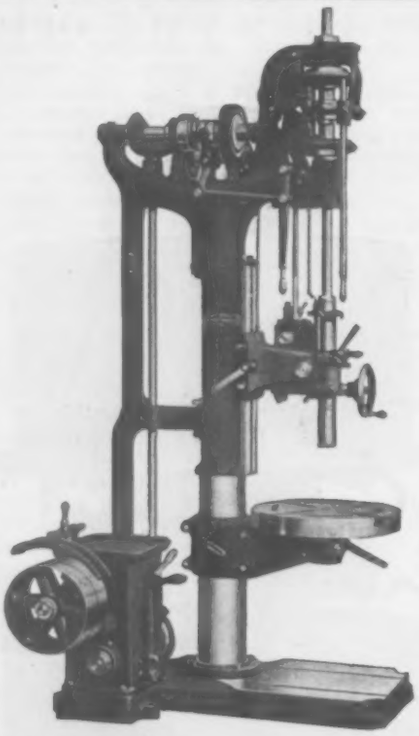
**One job after another set up and run. Not so much time required to change over but that production time savings can make it up and more, too!**

**Now this question of Mult-Au-Matic quantity refers to a class of boring, turning, and facing jobs,—Mult-Au-Matic possibilities,—not necessarily all alike. Do you have them?**

BULLARD

## THE BULLARD MACHINE TOOL CO.

BRIDGEPORT, CONNECTICUT



# *They Stand the Pace*

Each year production requirements are more drastic. Machines must produce more—must stand up under heavier schedules. Machinery that can't meet these increasing requirements hasn't a chance of surviving—it's scrapped.

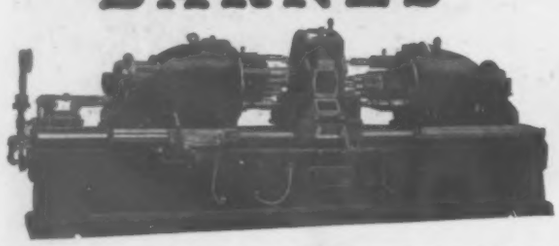
There are over 35,000 Cincinnati Uprights and Cincinnati Bickford Radials in use. The greater portion of these are Cincinnati Uprights—and some have been in use for years. They must be giving satisfaction—they must be standing the pace.

CINCINNATI

THE
CINCINNATI BICKFORD TOOL CO.
Oakley, Cincinnati, Ohio, U. S. A.

FOUNDED IN 1874 AND GOING STRONGER THAN EVER.

**BARNES**



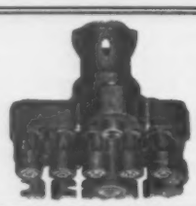
PRODUCTION DRILLING MACHINES

*Established 1872*
W. F. and John Barnes Co.
Rockford, Illinois

**Kingsbury Automatic Sensitive High Speed Drill Heads**

can be furnished in multi-spindle vertical, horisontal and turret type machines. Write for catalogue of these high production machines of ⅝" capacity.

**Kingsbury Machine Tool Corp.**
Keene, New Hampshire



**Get the Work Out!**
**With U. S. Multiple Drill Heads**

Keep the work moving in your shop by using U. S. Multiple Drill Heads. Rapid drilling of many holes is their strong point. Send us blue prints of your drilling operations.

THE U. S. DRILL HEAD CO.
1956 West Sixth St., Cincinnati, Ohio

LELAND-GIFFORD COMPANY
Worcester, Mass.
Drilling Machinery
Belt and Motor Spindle
One to Six Spindles
Tapping Attachments and Multiple Heads

**International Machine Tool Co.**
***THE LIBBY TURRET LATHE***
**INTERNATIONAL MACHINE TOOL CO.**
**INDIANAPOLIS** **INDIANA**

There is only one
**GORTON** DIE SINKING & ENGRAVING MACHINE
It's delicate
It's RUGGED
Geo. GORTON MACHINE CO. Racine, Wis.

**ENGRAVING MACHINES**
Pantograph and Automatic
**MARKING MACHINES**
Pantograph and Power Driven

H. P. PREIS & CO. Inc.
227 Fulton St., New York City